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9 January 1986

Worldwide Report

# NUCLEAR DEVELOPMENT AND PROLIFERATION

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## NUCLEAR DEVELOPMENT AND PROLIFERATION

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HONG KONG

# HONG KONG TO MONITOR RADIATION FROM PRC N-PLANT

Hong Kong SOUTH CHINA MORNING POST in English 25 Oct 85 p 8

[Text] The Royal Observatory will shortly order $1 million-plus of equipment to monitor radiation levels in the territory, so that possible radiation contamination from the Daya Bay nuclear plant can be detected.

When the long-term monitoring programme gets underway, in the middle of next year, 10 Government departments will be involved in its operation.

For instance, the Royal Observatory will collect water and air samples from its three stations (in Tsim Beu Tsui, Shataukok and Yuen Ng Fan near High Island) and will join with the Government Laboratory to analyse them.

The Medical and Health Department will be responsible for interpreting the results in terms of health hazards.

Other departments, such as Water Supplies, Agricultural and Fisheries, Urban Services, Labour and the Geotechnical Control Office will collect samples from reservoirs, food, coal ash and soil.

The purchase of equipment follows a recent report from the United Kingdom Atomic Energy Agency, which is advising the Government on assessing the nuclear plant's environmental impact on Hongkong.

The Royal Observatory is expected to call for tender for the required equipment before the end of next month.

On top of the basic cost for equipment, it is estimated a further $1 million will be needed in the years ahead for equipment installation, the purchase of a monitoring car, and so on.

Sample collection will begin in the middle of next year.

The agency agreed with the Government to produce seven reports on the various aspects of the Dayz Bay nuclear plant, including accident hazard assessment.

The first in the series of reports lists the equipment the Royal Observatory needs to monitor radiation levels accurately.

According to senior scientific officer at the Royal Observatory, Mr B.Y. Lee, the idea is to start monitoring radiation levels two years before the plant is commissioned.

The original schedule is 1989 but the latest estimate is 1991.

The agency package also includes providing training for five to six Hongkong officials from the Royal Observatory and the Medical and Health Department.

The first official to receive training is the Royal Observatory's Dr M.C. Wong, senior scientific officer, who is in charge of the Radiation Monitoring Division.

He left Hongkong for a two-month training course early this month.

The Environmental Protection Agency will play virtually no part in the monitoring programme.

/13104
CSO: 5150/0017

U.S. APPROVES ATOMIC POWER AGREEMENT REVISIONS

OW220401 Tokyo KYODO in English 0253 GMT 22 Nov 85

[Text] Washington, 22 November KYODO--Japan and the United States Thursday reached basic agreement to revise their bilateral atomic power agreement with new provisions requiring Japan to obtain prior U.S. approval for enriching uranium to more than 20 percent and strengthen physical protection of nuclear materials stored in Japan, a senior Japanese official said in Washington.

Yoshifumi Matsuda, director general for scientific and technological affairs at the Foreign Ministry, told reporters the United States would instead provide Japan with "generic" prior approval of its plans to reprocess spent nuclear fuel at Japanese atomic power reactors, thus simplifying complex procedures imposed on Japan under the current agreement, he said. Under the current pact, Japan is required to obtain U.S. approval for each case of reprocessing. However, the United States wants to have the right to unilaterally suspend the "generic" approval when necessary, a main stumbling block in the on-off negotiations since 1982.

Matsuda said Japan would have to concede such a right to the United States, although he hoped it would be limited in future negotiations. The two countries are expected to hold their next negotiations in Tokyo next January with the aim of signing a new pact as early as next year.

/12232
CSO: 5160/022

JAPAN

## GOVERNMENT REPORT URGES ATOMIC ENERGY DEVELOPMENT

OW030101 Tokyo KYODO in English 0054 GMT 3 Dec 85

[Text] Tokyo, Dec 3 KYODO -- A government report called Tuesday for further development of atomic energy as the nation's main alternative energy source.

Japan will continue to promote peaceful use of nuclear energy and to oppose proliferation of nuclear arms, said the annual report on atomic energy. The report, prepared and released by the Atomic Energy Commission, called for Japan to develop its own nuclear technology. It proposed sustained efforts in research and development of a fast breeder reactor.

The 1985 white paper on atomic energy said the international oil market will turn tight in the 1990's, pushing oil prices back up.

Japan will raise its atomic power output capacity to 48 million kilowatts in fiscal 1995, up from 23,630,000 kilowatts at the end of September. Nuclear power generation will account for 35 percent of the nation's energy in fiscal 1995, compared with 22.9 percent in fiscal 1984, the report said.

Power companies will start uranium enrichment, reprocessing of used fuel and disposal of low-level radioactive waste in the next decade, it said.

The report urged the government to establish technology for disposal of highly radioactive waste by the year 2000.

/9365
CSO: 5160/027

## BRIEFS

NUCLEAR POWER PLANT MISSION--Osaka, 14 November KYODO -Kobe Steel Ltd, Japan's fifth largest steelmaker, sent Thursday a high-caliber mission to China to sell its equipment related to nuclear power plants in China. Fuyuhiko Maki, president of the Kobe-based firm, is leading the 11-member mission, including 7 executives, on a 10-day visit to China until 23 November. Following an agreement signed last July for nuclear power cooperation between Japan and China, China has attracted Japanese firms as a promising market for equipment related to nuclear power. The mission will launch sales drive at the Asian-Pacific International Trade Fair, opening Friday in the suburbs of Beijing under the auspices of the China Council for Promotion of International Trade, company officials said. They said that Kobe Steel is exhibiting heat exchanger pipes for nuclear reactors and other equipment at the show. [Text] [Tokyo KYODO in English 0922 GMT 14 Nov 85 OW] /12232

CSO: 5160/020

PEOPLE'S REPUBLIC OF CHINA

## WESTERN EUROPEAN FIRMS BID ON NUCLEAR POWER PLANTS

Hong Kong SOUTH CHINA MORNING POST in English 7 Nov 85 p 12

[Text]

Beijing: The West German firm Kraftwerk Union is sending a team to Beijing next week to discuss its bid to build two reactors for a nuclear power plant in eastern China, a well-informed West German official said yesterday.

Before the West German group arrives, British and French negotiators were expected to return to Beijing late this week to resume troubled talks on another plant to be built at Daya Bay, near Hongkong, Western officials close to the negotiations said.

Marathon negotiations on Daya Bay that began on October 10 stalled over cost differences with the departures last week of the British General Electric team, which wants to provide the conventional equipment and Electricite de France, which would engineer the project.

Another French firm, Framatome, which is in line to provide the reactors, pulled out several members of its negotiating team, but others remained to continue the talks.

A positive outcome would pave the way for a contract worth an estimated US$1.37 billion (about HK$10.68 billion) for Framatome — which would be the largest contract to date between France and China — and US$300 billion (about HK$2.3 billion) for General Electric, according to figures released at the start of the negotiations.

Kraftwerk is interested in a plant to be built at Sunan, 130 km north of Shanghai.

This would be China's third nuclear power station after the 2,000 megawatt capacity Daya Bay facility and a 300 megawatt plant at Qinshan, 120 km south of Shanghai, to be built by domestic enterprises.

Kraftwerk is to send a 30-member delegation to Beijing sometime after Sunday.

The group will then go to Wuxi, near Shanghai, for two or three weeks to follow up its offer to construct the two 1,000 megawatt reactors for the Sunan plant, the West German official said.

The talks will centre on the firm's technical plan and will not deal with its price or financing arrangements which have yet to be agreed, the official said.

Two top Kraftwerk officials are currently in Beijing to prepare for the delegation's visit, which the official said would include talks with Ministry of Water Resources and Electric Power officials.

Another informed official said China had offered to pay for a large part of the project by stocking nuclear waste from West Germany in the Gobi Desert in northwestern China and by helping to supply significant amounts of non-ferrous metals.

Framatome is also interested in the Sunan project and is to submit a detailed bid in the next few months.

Western experts in Beijing, however, have said China's ambitious nuclear programme is already lagging and that the Government wanted to conserve its foreign currency reserves which have slumped in recent months. — AFP

/9274
CSO: 5150/0035

CANADA

OFFICIAL DENIES U.S. TESTING LAUNCH DEVICE AT NANOOSE BAY

Ottawa THE WEEKEND CITIZEN in English 19 Oct 85 p A13

[Text]

VICTORIA (CP) — The United States navy is welcome to bring nuclear weapons into Esquimalt Harbor but if it wants to test its Tomahawk missile launching device it will have to negotiate with Canadian authorities, an armed forces spokesman says.

Maj. Norbert Cyr made the comments Thursday in response to claims by New Zealander peace activist Owen Wilke who said ships and submarines entering Esquimalt Harbor near Victoria and the Nanoose Bay naval testing range near Parksville on Vancouver Island have nuclear arms.

Wilkes also said this week that the launch system of the U.S. Tomahawk sea-going cruise missile probably is being tested at Nanoose Bay, a joint Canadian-U.S. testing range.

Cyr denied there have been Tomahawk launch tests at Nanoose Bay but declined to confirm or deny that nuclear-armed vessels have been at the two installations.

If nuclear weapons are on board visiting American vessels, it is not a concern to Canada because of the defence agreement between the two countries, he said.

"Nuclear capable vessels, be they armed or capable of being armed with nuclear weapons, are perfectly welcomed to visit Canadian ports," Cyr said.

"Canadian government policy is Canada will not possess nuclear weapons, and we never have. But for visiting ships to have them on board is perfectly acceptable from a Canadian policy point of view."

He said the government is confident that any nuclear weapons on board these ships are stored safely.

Nuclear-powered vessels, however, are allowed into only a few Canadian harbors, including Esquimalt, Nanoose and Halifax, which have special monitoring and response equipment in case of accidents.

/9317
CSO: 5120/26

CANADA

AECL ASKED TO BID ON SOUTH KOREAN, YUGOSLAV REACTOR DEALS

Ottawa THE WEEKEND CITIZEN in English 9 Nov 85 p E11

[Text]

Atomic Energy of Canada, the federally-owned company that markets the Candu reactor for export, has been asked to bid on construction of up to four nuclear power stations in Yugoslavia and South Korea, The Canadian Press has learned.

South Korea, which already has a Canadian-made reactor operating at Wolsung, wants AECL to bid on at least one and as many as three reactors, while Yugoslavia wants a bid for one reactor with the possibility of several more.

Don Lawson, president of AECL's Candu operations division, confirmed Friday that the company has been asked to make the bids. But he cautioned that "these are going to be hard-fought competitions."

Lawson said it will take until the spring to prepare the bids.

There is no indication how much the work would be worth, but Lawson said both countries want to do some of the work themselves, bringing the value of one reactor down to less than half the $1-billion cost of a complete system.

AECL has not sold a complete reactor since 1979, when it made a sale to Romania, and has not had any new export business at all since 1981 when Romania placed an order for some work on a second Candu reactor that it is building itself.

AECL has already won a bid from Turkey to build a 600-megawatt power plant on the Mediterranean coast, but the company still requires federal government approval for financing the sale.

The Turks want the consortium that AECL has set up to own and operate the plant for 15 years and recover its costs from selling electricity.

Lawson said neither Yugoslavia nor South Korea has followed Turkey's lead and suggested such an ownership scheme.

AECL could be competing on the South Korean and Yugoslavian orders with about five or six other companies from France, West Germany, the United States, Britain and Japan.

/9317
CSO: 5120/26

CANADA

# SUBMARINE UNDER CONSIDERATION COULD TAKE NUCLEAR PLANT

Toronto THE GLOBE AND MAIL in English 8 Nov 85 p A1

[Text]

HALIFAX

One of the submarines Canada is considering for replacement of its aging diesel-electric fleet is designed to nuclear standards and could be adapted to take a nuclear power plant, a spokesman for the British High Commission in Ottawa says.

Capt. James Laybourne, naval attache at the high commission, says a version of the British 2400 Upholder class submarine is designed to be fitted with a nuclear power plant if a buyer requests it.

The first of the Upholder class subs for the Royal Navy, fitted with a conventional diesel-electric power plant, will be launched in 1986 and will undergo sea trials in 1987, he said.

The Upholder class is one of five foreign sub designs before the federal Cabinet.

Lieut. Mike Considine, an Ottawa defence spokesman, said the navy request calls for four foreign-designed but Canadian-built submarines to be introduced in the mid-1990s. The other submarines under consideration — two designed in West Germany and one each from Sweden and Holland — can carry only a conventional power plant.

The performance specifications for the new Canadian subs say they must be deep diving, have long range and greater ability to dive and patrol under ice than three existing Oberon class subs now in service, Lieut. Considine said.

/9317
CSO: 5120/26

CANADA

BANK RISK SHARE REPORTEDLY ASKED IN TURKISH REACTOR DEAL

Toronto THE TORONTO STAR in English 13 Nov 85 p G1

[Article by Diane Francis]

[Text]

A proposal asking taxpayers to back a $1 billion package of bank loans to build a Candu reactor in Turkey won't be taken to the federal cabinet unless banks agree to take some of the risk, sources say.

Behind-the-scenes talks between bankers and various government departments have been progressing following the loan request by Candu creator Atomic Energy of Canada.

The company, controlled by Ottawa, is asking for $1 billion in loan guarantees to finance the purchase of Canadian goods and services for the reactor, which is to be built, operated for 15 years and sold to Turkish electrical utility TEK.

Banks want a piece of the action because government-backed loans are considered risk-free but they are going to have to assume at least 15 per cent of the risk, say government sources.

That is, Ottawa will guarantee only 85 per cent of the loans in the deal, which could create 7,500 jobs in Canada's slumping nuclear industry.

"Exporting a Candu means more bang for the government's buck because 100 per cent of the components and services are made in Canada," said one source.

Besides taking on a 15 per cent risk, the banks will also have to set aside 15 per cent, or $150 million, as reserves against the loan, said Roy Palmer, banking analysts with Alfred Bunting & Co. Ltd. That will reduce their profits, he added.

"The banks won't be sorry to add that (loan) to their books," Palmer said. "But reserves have had to be set aside in the last two or three years under new federal rules (covering loans to) countries outside Canada. By the end of 1986 the banks must have reserves against their loans in 32 countries of 10 to 15 per cent."

This means banks participating in the Turkish loan must set aside — from profits — $150 million.

"The money doesn't disappear; it can earn interest, but it won't be reported to shareholders as profits."

Under the terms of the deal, Atomic Energy would pay interest on the bank loans, recouping costs from the electricity rates charged the Turkish utility.

"Views are mixed," said Palmer. "The banks want to participate and in certain countries it has been profitable, but the ridiculous reserve requirement would hurt this."

/9317
CSO/ 5120/26

CANADA

ONTARIO HYDRO ON CANCER DANGER FROM NUCLEAR PLANTS

Ottawa THE CITIZEN in English 12 Nov 85 p A14

[Text]

TORONTO (CP) — "About two or three" members of the general public will die of cancer over the next 100 years for every year Ontario Hydro operates its nuclear reactors, a Hydro report says.

The report, prepared in response to a recent book that predicts much higher cancer death totals because of the reactors, says most of the fatalities would be due "largely to emissions from (uranium) mine and mill tailings which (can be) readily eliminated."

The book, *Radiation Alert*, released last month by Energy Probe researcher David Poch, predicted 600 Canadians would eventually die for every year the country's nuclear power program operates.

Poch's book and the Hydro study by D. W. Whillans of the utility's health and safety division are both based on figures in a 1982 report of the United Nations Scientific Committee on the Effects of Radiation.

The UN analysis looked at public exposure to radiation from all normal phases of the "nuclear fuel cycle" that add low levels of radiation to the environment. These include the mining and milling of uranium ores, fabrication of fuel rods, production of power in the reactors, reprocessing of old fuel, transportation of radioactive materials and disposal of radioactive wastes.

None of the studies includes the consequences of a major accident at a nuclear power plant. Nor do they count deaths among uranium miners or power plant workers.

One major difference between the Poch and Whillans estimates is the time frame involved. In his book, Poch says most of the deaths he has projected "will be very far in the future."

/9317
CSO: 5120/26

CANADA

## BRIEFS

CHALK RIVER REACTOR STARTUP--Chalk River--The NRU research reactor at the Chalk River Nuclear Laboratories here has been started up again after a spring leak resulted in a seven-month shutdown. The leak, in a tube used to carry neutron beams from the reactor core for use in physics experiments, was discovered April 12. The broken tube was removed and repair liners were inserted during the shutdown. While the NRU reactor was out of action, the laboratory's other reactor--NRX--supplied the company with isotopes necessary for physics, fuels and materials experiments. [Text] [Ottawa THE CITIZEN in English 16 Nov 85 p A12] /9317

CSO: 5120/26

YUGOSLAVIA

## DOMESTIC UNITY, PARTICIPATION NEEDED IN NUCLEAR PLANTS

Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 25 Nov 85 pp 24-25

[Article by D.N.]

[Text] It has not been a month since SLUZBENI LIST [Official Gazette of the Socialist Federal Republic of Yugoslavia] published an international invitation for bids on the series of nuclear power plants which will be built in Yugoslavia up to the end of this century and in the first years of the next, and most of the important foreign firms have already bought the documentation. These are tenders which elaborate in detail what is expected and required of the foreigners concerning the type of nuclear reactor and fuel cycle for the series of four nuclear power plants, along with a specific offer of both equipment and work items for the first of them, the Prevlaka NE [nuclear power plant]. The documentation is being sold to the foreign firms for $20,000, while the interested domestic parties, who will make bids along with the foreigners, have to pay 600,000 dinars.

The tender packages have already been purchased by the following firms: Westinghouse from the United States, Ansaldo from Italy, Kraftwerke Union from West Germany, CANDU from Canada, Framatom along with Alts Atlantic from France, and Mitsubishi from Japan. The Japanese firm Toshiba has also announced its purchase. The domestic organizations which have so far purchased the documentation include Jugoturbina, "Rade Koncar," INA and Energoinvest. After the invitation expires, the period for acceptance of bids is six months. The half-year following that has been planned for studying the bids and possible clarifications, and at the end of next year electric power organizations, designers and machine building organizations are to propose to the Federal Executive Council a selection of the type of nuclear reactor and fuel cycle and the foreign firm with which the series of nuclear power plants will be undertaken.

### Unprecedented Undertaking

Although the first nuclear power plant, Krsko, has been operating successfully in Yugoslavia for three years now, it is this international invitation for bids that for all practical purposes has initiated the process of involving the Yugoslav economy in nuclear technology. The invitation was preceded by extensive preparations over a period of ten years, which involved

the entire domestic scientific potential, potential investors and equipment manufacturers, but also government bodies, sociopolitical communities and sociopolitical organizations. the need for involvement in the nuclear program was evaluated from several angles: from the standpoint of energy - in terms of the need to furnish the necessary quantities of energy for development; the industrial standpoint - in terms of the need to master new technologies and to raise the quality of production to a higher level, from the scientific standpoint - in terms of catching up with present-day developments in the world and switching research in this field from the theoretical to the practical, and from the socioeconomic standpoint - in terms of an opportunity for progress and growth of the national income. A host of studies, both broad and detailed, were prepared for this unprecedented undertaking.

In literally all the documents there is a very obvious need to arrive at a single Yugoslav model for inclusion in the nuclear program. From the energy standpoint nuclear power plants with installed capacity of 1,000 MW are too big to be included in any of the eight republic-provincial systems, so that engineering simply compelled the electric power organizations to enter into the nuclear projects together. From the economic standpoint nuclear power plants are so expensive that no single organization could afford them, so that economic logic simply pushed them together. The involvement of the scattered scientific potential and design and engineering organizations in the country's nuclear program also requires a completely different approach, not to mention the equipment manufacturers, who would gradually master the equipment and fuel through cooperation with some of the foreign firms. For all of these and many other reasons they have arrived at nuclear unity based on social compacts, self-management accords, consortiums and business communities.

It might seem strange that unity should come about under the pressure of engineering, technology and economics, although it seems that that is the more natural way than slogans and proclamations. It doesn't matter that the nuclear community came about concerning the process of fission, that is, the splitting of the atom, which up to now has been more evident in socioeconomic divisions on an artificial basis. The process of fusion, which is the world's energy future judging by what is known to date, can thus be welcomed with better preparedness.

How To Collaborate With the Foreigners

The documents which are the subject of the international tender have defined the essential points concerning future cooperation with foreigners. In principle each of the four types of nuclear reactors used in the world today can be incorporated into the Yugoslav electric power system, so that the determination and the choice depends primarily on what is offered. The fundamental requirement is the way in which the foreigners will involve and enable the domestic industry for nuclear technology and under what terms and conditions. The desire is to achieve gradual independence in the fuel cycle. Gradually, because the fuel cycle requires development of seven separate processes, and it does not pay economically until at least 5,000 MW

of installed capacity of nuclear power plants have been built in the electric power system. The tenders contain more than 120 specifications of nuclear equipment which domestic manufacturers are able and anxious to master. It is also very important how the transfer of technology and know-how will be made in scientific institutes that will be involved in the nuclear program.

It is early to speak about the value of the entire project, especially since different figures have been mentioned. The electric power industry assumes that each of the nuclear power plants would cost $1.5 million, but figures even as high as about $15 billion for the four nuclear power plants have been mentioned in public. The investors have estimated that foreign borrowing would have to range up to 40% of the value, but one fairly difficult condition has been included in the tender documentation. The foreign credits would be repaid with deliveries of Yugoslav goods amounting to at least 85% of the total debt. According to that "scenario," the debts arising out of the nuclear program would be repaid over the next 25 years, that is, over the period of 15 years after each power plant goes on line. The debt would be entirely repaid somewhere around the year 2023.

It is striking that the firms which have purchased tender documentation do not include the important manufacturers from the East, specifically from the USSR. The absence of Soviet manufacturers from this type of international invitation was known in advance and is a matter of principle, but this does not mean that there is no bid from them. Provision has been made for obtaining such a bid in direct talks through a procedure similar to the one that applies to the others. There is no doubt that the Soviet organizations also want to deliver equipment to Yugoslavia for nuclear power plants, especially since domestic producers have so far collaborated in the production of equipment for nuclear power plants only with Soviet firms. This might even prove to be an advantage or on the other hand a disadvantage when the decision is made.

All the efforts of domestic machine building to become involved somehow in the nuclear programs of the Western countries have been unsuccessful, although they have gone on for decades now. In the East, however, several domestic manufacturers have for years been collaborating on nuclear programs running to rather sizable figures. Over some ten years, counting the business already under contract, the value of deliveries of domestic machine building is estimated at about one billion dollars. That is not an unimportant argument, especially for the organizations which in this way have obtained new technology and new business. But it is not clear to what degree they would keep that business if Soviet organizations do not take part in Yugoslavia's nuclear program.

There are many ideas, one hears various combinations, there is talk of sizable and valuable business ... but it is still early to work out any sort of combinations. Only when the bids come in, when the necessary talks are conducted, and when differing domestic interests are reconciled (above all those of equipment manufacturers), will it be possible to discuss in detail the nuclear program which the invitation for bids has initiated.

## BRAZIL, ARGENTINA DISCUSS JOINT COOPERATION

### Nuclear Pact, Joint Ventures Seen

PY031244 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 30 Nov 85 p 4

[Article by special envoy Hugo Martinez]

[Text] Foz do Iguacu -- Argentine Science and Technology Minister [title as published] Professor Manuel Sadosky yesterday told O ESTADO DE SAO PAULO that "the signing of a nuclear accord for the peaceful use of nuclear energy will strengthen a prior accord that is in full effect. The broad nuclear accord that will be signed can only occur at a time of full agreement, devoid of political sensitivity," adding that "we are working realistically. Everything is progressing even faster than expected. In January, 200 Argentine scholarship holders will study at Campinas University, and in January 1987 200 Brazilian students will study informatics and computer science in Argentina."

Sadosky agreed that Brazil is more advanced in those sciences, but emphasized that there should be no cultural or scientific rivalry. He also believes that it could be interesting for Brazilian professionals to gain a broad view of what is being done in Argentina in the field of nuclear physics. A Higher Latin-American Informatics School, where Brazilian and Latin American scholarship holders will study, is being built in a wooded area near Buenos Aires.

In the military field, there are joint venture projects of all three branches but the Air Force projects are the most advanced. Air Force chief of staff Brigadier General Ernesto Crespo has confirmed to O ESTADO DE SAO PAULO that several joint-venture projects are being considered. He said: "One of them is possible participation in development of the AMX, along with the Aermacchi company of Italy and the Brazilian Aeronautics Company, Embraer. However, we also have an agreement with the FRG enterprise Dornier to manufacture fighter planes. I feel that the AMX has a limited range for our needs and it does not have an inflight refueling capability. Nevertheless we will work on that possibility."

In the naval field, Navy Chief of Staff Admiral Ramon Arosa has denied that a joint-venture with the Brazilian Navy is "currently" underway. However, other military sources have confidentially disclosed that the two navies are studying an extremely complex -- and secret -- project which is to include other advanced research sectors.

In turn, Economy Minister Juan Sourrouille has stated that "we are constantly maintaining excellent talks with the Brazilian finance minister. Because of my trips we have

not talked for a month now. Therefore, I have come to update him on our activities." Asked whether Argentina will adopt the Baker Plan, Sourrouille replied: "We will not accept a plan that has been drawn up outside our country. As customary, we will implement plans devised in our country. The Baker Plan hints at the possibility that the United States has understood that the foreign debt issue needs treatment that goes beyond purely economic techniques. In that regard, it gives cause for hope. Anyway, for the time being we are still studying it." Asked whether he did not find the U. S. praise of the Austral plan excessive, Sourrouille noted: "Yes, indeed. I am concerned over such overwhelming compliments. I am asking myself if we did not make a mistake somewhere along the line..."

President Alfonsin devoted a paragraph of his speech to announce that a Brazilian enterprise will build a hydroelectric dam in Argentina.

Although he failed to mention it, reliable sources have revealed that the enterprise in question is the Odebrecht Company from Bahia.

## Alfonsin Wants Nonproliferation

PY031410 Rio de Janeiro JORNAL DO BRASIL in Portuguese 1 Dec 85 p 16

[Article by correspondent Rosental Calmon Alves]

[Excerpts] Foz do Iguacu -- The 2-day meeting between Presidents Jose Sarney and Raul Alfonsin concluded yesterday in an optimistic and even enthusiastic atmosphere due to the consensus in relations between the two largest South American countries, which has never been as good as now. Proof of this was the surprising visit Alfonsin made, departing from his official program, to the Itaipu hydroelectric project, the construction of which provoked one of the greatest crises between Argentina and Brazil. But in Foz do Iguacu not everything turned out to be in agreement because the Brazilian Government was rather reluctant concerning an Argentine suggestion that special safeguards be created to prevent the manufacture of an atomic bomb by one of the two countries.

This fact did not affect the general climate of understanding that President Alfonsin described as "historic" and President Sarney viewed as "unprecedented." In view of the Argentine position, Brazil agreed to the creation of a joint work group, coordinated by the two foreign ministries, that will extend into the political field the good bilateral cooperation that has existed in the scientific and industrial fields over the past 5 years. The presidents themselves signed a special declaration on the creation of that new organization. It will hold its first meeting within a period of 120 days.

JORNAL DO BRASIL has found that the Argentine proposal includes the creation of special safeguards to prevent either of the two countries -- the most advanced in the field of nuclear energy in Latin America -- from being tempted in the future to divert their current research to the military field. One of these safeguards, for example, would consist of periodic inspections of the nuclear installations functioning in the two countries; the Argentines would visit the Brazilian installations and vice versa.

Should an agreement be reached in this regard, the two countries would reach a turning point in their historical stand against certain international inspections and in their commitments not to develop atomic weapons. Argentina has signed the Tlatelolco Treaty that forbids proliferation of nuclear weapons in Latin America but has not ratified it, which in practice means that it is not obliged to comply with it. Brazil has not even signed it.

The bilateral agreement will reportedly be included in the list that will be prepared of unprecedented and imaginative measures adopted thanks to the good relations existing now between Brasilia and Buenos Aires. Already included in that list, for example, are the agreement for equilibrium in the two countries' trade balance (every year there is a $50 million deficit, the governments will intervene to balance it), and the top level commission headed by the foreign ministers and created yesterday to discuss economic matters of interest to Brazil and Argentina.

But regarding the Argentine idea on nuclear safeguards, the maximum to which Brazil has agreed, at least for the time being, is the creation of a joint work group made up of representatives of the commissions and enterprises of the nuclear area but "under the supervision of the Brazilian and Argentine foreign ministries."

According to the special declaration signed yesterday by Sarney and Alfonsin, one of the objectives of that group is "the creation of mechanisms that will guarantee the higher interests for peace, security, and the development of the region."

This implies the inclusion of discussions in the political field, so much so that the declaration makes a reservation, stating that the new organization will act "without prejudice to the technical aspects of nuclear cooperation, which will still be governed by the instruments that are in effect." In other words, the two governments agree on the fact that the new political discussion must not interfere in the scientific and industrial cooperation which has developed successfully for 5 years and which includes the exchange of equipment for nuclear plants and the sending of technicians to be trained in the other country.

In any case, the presidents themselves have revealed their current disagreements on this issue. Speaking to the Brazilian press on Thursday in Buenos Aires, President Alfonsin flatly stated that he would sign "with pleasure" the safeguards to prevent the proliferation of nuclear weapons in the region. Yesterday, however, when an Argentine reporter asked President Sarney if that new work group will study the safeguards, he avoided the question and answered only that Brazil is a peaceful country, that it wants nuclear energy for peaceful purposes, and that in relation to the Gross Domestic Product, it has one of the lowest military budgets in all of Latin America.

## Declaration Published

PY032258 Sao Paulo FOLHA DE SAO PAULO in Portuguese 1 Dec 85 p 11

["Text" of "Iguazu Declaration," signed by Brazilian President Jose Sarney and Argentine President Raul Alfonsin on 30 November 1985 in Foz do Iguacu]

[Excerpt]

28. In the scientific and technological cooperation field, the two presidents voiced their conviction that science and technology play a fundamental role in socioeconomic development and noted the importance of the basic agreement as the adequate framework for bilateral cooperation. Tangible evidence of this bilateral cooperation is reflected in the additional agreements concerning reforestation, special activities, agriculture, communications, and the agreement signed during this meeting regarding biotechnology, as well as in the cooperation agreement on the use of nuclear energy for peaceful purposes. They also noted the importance of technical cooperation between institutions which is reflected in projects in the virology field, professional training, and transportation. In this regard they expressed satisfaction with the negotiations underway between the two governments aimed at drawing up a memorandum of understanding concerning cooperation for research and technology in the transport field.

29. With the purpose of intensifying efforts in the scientific and technological cooperation field, the two presidents decided to create a subcommittee, within the framework of the high-level commission, to be headed by the secretary general of the Brazilian science and technology ministry and by the Argentine science and technology promotion under secretary.

30. In particular, they emphasized the importance of the agreements reached by the two governments in July and August 1985 regarding the initiatives for the expansion and equilibrium of trade between Brazil and Argentina, with the purpose of promoting economic and commercial cooperation and bilateral exchange. And, to increase trade with third markets, the two presidents decided to create a subcommittee for economic and commercial affairs, to be headed by the secretary general of the Brazilian Foreign Ministry and the under secretary for international economic relations of the Argentine Foreign Ministry.

31. Moreover, the two presidents expressed satisfaction with the signing, on this same day, of the "Joint Declaration Regarding Nuclear Policy," which reflects the peaceful purposes of the programs the two countries are developing in the nuclear field and which are in keeping with the best traditions of cooperation and peace that inspire Latin America.

32. Finally, Presidents Jose Sarney and Raul Ricardo Alfonsin emphatically reasserted that the democratization process that the continent is experiencing should lead to a greater rapprochement and integration of the people of the region. They also stated that for the Latin American people, democracy must bring peace, liberty, and social justice. They committed themselves to making every effort to encourage the societies of the continent to uphold the principles of human dignity, cooperation, solidarity, peace, and well-being. They ended by asserting that Brazilian-Argentine bilateral relations with be an example of this ideal."

/9599
CSO: 5100/2023

## PERU, ARGENTINA NUCLEAR AGREEMENT EXTENDED

PY091650 Madrid EFE in Spanish 0202 GMT 9 Dec 85

[Text] Lima, 1 Dec (EFE) -- It was reported today in Lima that Peru and Argentina have signed an extension agreement to finish the Peruvian Huarangal nuclear complex and the potency-10 reactor. The state-owned news agency ANDINA reported that this agreement was signed by General Juan Barreda, chairman of the Peruvian Nuclear Energy Institute (IPEN), and by Alberto Constantini, president of the Argentine Nuclear Energy Commission, who today returned to his country after a 2-day stay in Lima.

The agreement, which extends that previously signed by the two countries for Argentine financing of the construction of the Huarangal complex, provides for agricultural, medical, and industrial uses.

Before leaving, Constantini said that the world's present reality does not permit us to think, "even remotely", of war, but "rather of using nuclear energy in agriculture, industry, and medicine, which our peoples need so much."

The Argentine official reported that his country will carry out studies for the exploitation of uranium deposits, which have been discovered recently in the Peruvian Department of Puno, southeast of Lima, and for the construction of the plant which will produce 30 tons of this metal. He added that Peruvian Prime Minister Luis Alva Castro and the IPEN chairman have been invited by the Argentine Government to visit Argentina in January in order to observe the development of the nuclear program for peaceful purposes.

/6091
CSO: 5100/2028

BRAZIL

ALFONSIN, SARNEY SIGN NUCLEAR DECLARATION

PY301805 Buenos Aires TELAM in Spanish 1533 GMT 30 Nov 85

[Text] Foz do Iguazu (Brazil), 30 Nov (TELAM)--Argentine President Raul Alfonsin and Brazilian President Jose Sarney today signed a joint declaration on nuclear policy in wich they reaffirmed their commitment to develop nuclear energy for exclusively peaceful purposes. Additionally, they agreed to maintain close cooperation in this area and made it clear that all other Latin American countries may participate in this cooperation program.

In line with these objectives, they announced their decision to create a joint work group that will be supervised by the two foreign ministries and will be made up of representatives of the respective nuclear commissions and enterprises. The work group will be charged with promoting relations between the two countries in the nuclear area.

The two presidents also agreed on instructing their respective foreign ministries to call a meeting of the joint work group in 120 days in order to examine the procedures that might be needed for the implementation of this declaration.

The declaration states that nuclear technology and science have become extremely important for any modern country that seek to significantly promote its socioeconomic development. It also urges the creation of mechanisms that would ensure the higher interests of peace, security, and development in the region without undermining the technical aspects of nuclear cooperation, which will continue to be governed by the existing instruments.

/6662
CSO: 5100/2021

BRAZIL

## IPEN EMPLOYEES STAGE PROTEST, NOTE DEACTIVATION OF SECTIONS

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 26 Oct 85 p 16

[Text] About 300 employees of the Institute of Energy and Nuclear Research (IPEN) staged a demonstration yesterday morning in front of the governor's palace in an attempt to convince the state governor to negotiate their salary demands with the federal government. At the same time, they want the state to break the contract that transferred administration of the IPEN to the federal government.

The employees were informed that the state government is not going to interfere in federal salary policy since it intends to have the autonomy to make decisions regarding the salaries of public employees. But at a meeting with the special affairs adviser of the Secretariat of Government, Marcelo Antinori, an employees' committee succeeded in getting a pledge from him that the government will ask Industry and Commerce Secretary Einar Kok and the president of the state energy companies, Jose Goldemberg, to meet with the employees' group and discuss the possibility of the state government breaking the agreement that transferred administration of the institute to the federal government.

The IPEN employees' salary demands are being discussed by the Interministerial Salary Council for State Enterprises (CISE), which is comprised of Planning Minister Joao Sayad, Finance Minister Dilson Furnaro and Labor Minister Almir Pazzianotto. The employees want restoration of 8.16 percent over the September salaries; 2 percent for productivity retroactive to March; a 30 percent advance for the months of December, January and February; and a change from the 5-year to a 1-year contract.

The employees revealed also that they have already learned that the National Nuclear Energy Commission (CNEN), technically and administratively in charge of the IPEN, is not interested in strengthening the agency, mainly "because it has sought slowly to deactivate various important sections or has transferred their activities to Rio de Janeiro." For that reason, they want the state government to study the possibility of revoking State decree No 22,219 of 22 December 1982, which transferred the IPEN to the CNEN.

12828/8711
CSO: 5100/2015

BRAZIL

REPORTAGE ON NUCLEN, NUCLEP EMPLOYEES' STRIKES

800 NUCLEN Employees Strike

Rio de Janeiro O GLOBO in Portuguese 8 Nov 85 p 18

[Text] The 800 employees of the Brazilian Nuclear Corporation (NUCLEBRAS) subsidiary, the Nuclebras Engineering Corporation (NUCLEN), went on strike yesterday in protest against the decision of the Interministerial Salary Council for State Enterprises (CISE), denying them a salary restoration of 9.6 percent. The strikers distributed a manifesto "To the Public and the Authorities of the New Republic" and decided at a meeting to remain on strike for an indefinite period.

The director of the Association of NUCLEN Employees, Silvio Zen, explained that the group resorted to the Labor Court yesterday because it considered the rejection unfair inasmuch as the other state companies obtained the restoration.

Last Wednesday, CISE approved various demands of the employee group, such as a two minimum-wage floor, advances of 25 percent next year and vacation bonus. The employees held another meeting this morning and at noon will hold a demonstration in front of the NUCLEBRAS building on Presidente Wilson Avenue in the Center. Of the total number of NUCLEN employees, 400 are technicians specialized in nuclear engineering, many of them trained abroad. The director of the association warned of the risk of those professionals going into private industry because of the low salaries.

The Manifesto

Following is the full text of the manifesto of the NUCLEN employees, signed by the Association of NUCLEN Employees (AEN), the Engineers Union of the State of Rio de Janeiro and the Union of Chemists and Chemical Engineers of the State of Rio de Janeiro:

"Assembled at a meeting on 5 November 1985, the employees of the Nuclebras Engineering Corporation (NUCLEN) decided to strike beginning this Thursday, holding a meeting at the company gates to assess the decision of CISE and discuss continuation of the strike.

"The situation of the NUCLEN professional is dramatic: abandoned, poorly paid, without a present and without prospects for the future. His salary is degrading and his professional future discouraging.

"Up to this time, the Interministerial Salary Council for State Enterprises (CISE) has not issued an opinion on our collective agreement which, though tentative and inadequate, could help reduce our immediate financial problems.

"Another commission, the Commission for Reevaluation of the Nuclear Program appointed by the presidency of the republic, should shortly issue its opinion on the new identity that the companies of the NUCLEBRAS Group should have. It so happens that because of the condition of abandonment and neglect to which the employees of NUCLEN feel relegated today, whatever proposal may be made will be impracticable if concrete measures are not taken now to prevent the drain of personnel resulting from the chaotic situation of the nuclear program.

"The NUCLEN technicians, the great majority of whom were trained in Germany at substantial cost to the country, are leaving the company. Those who have not yet left are going to do so.

"The authorities of this country should understand that the investments made are going to be irretrievably lost. Without its technicians, the company does not exist. It is nothing without them and nothing will be accomplished. We want decisions.

"We support revision of the nuclear agreement so as to really put it in the service of society. We are collaborating with all the commissions that have been formed, however, today we are living at the tolerable limit.

"We are asking for a decision, gentlemen; a decision right now.

"It is already late but there is still time."

## NUCLEP Metalworkers Strike

Rio de Janeiro O GLOBO in Portuguese 12 Nov 85 p 19

[Text] The 830 metalworkers of the Nuclebras Heavy Equipment Corporation (NUCLEP), a Nuclebras subsidiary, went on strike yesterday for an indefinite period while the 800 engineers of NUCLEN decided to return to work today after a 5-day strike.

The employees of NUCLEP, which is located in Itaguai in the state of Rio, scheduled a meeting for this morning at which they plan to decide whether they should proceed with the strike and present a collective dispute to the Labor Court. The demands of the metalworkers are the same as NUCLEN's: two minimum-wage salary floor, two minimum-wage vacation bonus, 25 percent advance wages in January-February and a 9.6 percent wage restoration.

The workers also fear that the slowdown of the nuclear program will be seriously detrimental to the program of absorbing nuclear technology. In many cases, nuclear metallurgy requires continuous training in addition to the recycling of the technicians.

The employees of NUCLEN agreed [garbled words] to sign the salary agreement with the company with the items already approved by the Interministerial Salary Council for State Enterprises (CISE) and return to work.

8711/12859
CSO: 5100/2020

BRAZIL

## CHIEF OF STAFF SUPPORTS NUCLEAR CYCLE RESEARCH

### Amaral Comments

PY062324 Rio de Janeiro O GLOBO in Portuguese 5 Dec 85 p 8

[Text] Brasilia -- Jose Maria do Amaral, chief of staff of the Armed Forces, yesterday voiced his support for the research aimed at mastering the complete nuclear cycle for peaceful purposes and at the same time asserted that there is no interest in using the atom for military purposes. Amaral said that "we must master the complete fuel cycle in order to produce energy and all other possibilities that this technology may grant us, such as its use for genetic purposes in the agricultural field and other similar benefits." However, Amaral noted that "we must remember that the technology for making nuclear fuel may be used for producing anything from electricity to nuclear arms. Therefore, a nuclear bomb could be produced by a mere student."

According to the Armed Forces chief of staff, "It all depends on a political decision that is not in the hands of the military ministries. It falls within the jurisdiction of the president of the Republic and congress but we must not forget that an atomic bomb by itself has as much power as a soccer ball." Amaral said that a launcher as well as a control system and a protection system against electronic and electromagnetic interferences are necessary. Moreover, one needs to previously decide on the targets to be reached and to have a potential enemy. We are far from having any of these.

A journalist asked Amaral whether the bomb was necessary. Almost immediately he answered: "Not necessarily, especially now that there are effective measures against intercontinental missiles. In the past, they were the ultimate in terms of war. Nowadays, "star wars" is the maximum development technology has achieved. Under "star wars" any nuclear attack is detected by satellites and destroyed by other military satellites equipped with laser rays." Amaral then wondered: "Should research regarding counterweapons be carried out? Of course, I am talking theoretically. We are far behind the technological development necessary to engage in a program of that nature. There is no sense in carrying out research regarding a weapon against which an effective measure has already been created."

He was asked: Mr Amaral, are you not concerned over the Argentine nuclear military program?

"I have just met in Foz do Iguacu with the Argentine defense minister, and for 2 days we discussed issues of common interest to our countries. I can assert that relations between the two countries have never been so close. President Alfonsin's visit to Itaipu [hydroelectric dam] proves this. A few years ago this would have been inadmissible."

## Chaves Refuses to Comment

PY081750 Sao Paulo FOLHA DE SAO PAULO in Portuguese 6 Dec 85 p 4

[Excerpts] Brasilia -- Admiral Jose Maria de Amaral Oliveira, the chief of the Armed Forces staff (EMFA), has said that "any university is capable of developing the technology to make an atomic bomb because the same level of technology is used for the production of electric power as for a nuclear weapon."

Mines and Energy Minister Aureliano Chaves, 56, has refused to comment on reports that Brazil may have a parallel nuclear program. Meanwhile, a document drawn up by the National Nuclear Energy Commission (CNEN) and submitted to the Presidency of the Republic 2 months ago stated that some of the technologies being developed in Brazil for peaceful purposes "can be used for military purposes." According to the document, "the government believes that it is not fair to stop the development of a technology that may benefit the entire Brazilian society just because part of this technology could be used for military purposes."

Aureliano Chaves termed "ridiculous" the news that President Sarney may have rejected a proposal by Argentine President Raul Alfonsin to sign a bilateral agreement for the mutual control of nuclear programs on the grounds that such an agreement could unveil the parallel nuclear program being developed by the CNEN jointly with the Aerospace Technology Center (CTA) of the Aeronautics Ministry. In his opinion, to accept this thesis would amount to "signing a treaty of mutual distrust." The research being conducted by the CNEN and the CTA is not subject to the supervision of the International Atomic Energy Agency (AIEA), which is in charge of controlling the work undertaken under the terms of the agreement signed with the FRG in 1975. This work is subject to AIEA supervision in keeping with safeguard clauses. According to experts from the Mines and Energy Ministry, the studies being developed by the CNEN and the CTA are quite advanced and are aimed at making enriched uranium in the reactors.

/8309
CSO: 5100/2026

BRAZIL

## BRIEFS

U.S. PLANS FOR BRAZILIAN ISLANDS DENOUNCED--Brasilia--Speaking from the Senate rostrum, Senator Jose Ignacio Ferreira (PMDB-ES) [Brazilian Democratic Movement Party--Espirito Santo State] yesterday denounced United States plans to use Martin Vaz and Trindade Islands--1,000 km off the Espirito Santo coast--to test nuclear weapons and set up a nuclear base there. It is reported that $350 million will be invested in the project. According to Senator Ferreira, this information has appeared in the magazine AFRIQUE ASIE, published in Paris, and, should it be confirmed, "national sovereignty over the islands, which are regarded as being of extreme strategic importance, would even be at stake." Ferreira added that the objective reportedly is to increase control over the South Atlantic, as England did with the Malvinas Islands. [Text] [Sao Paulo O ESTADO DE SAO PAULO in Portuguese 30 Nov 85 p 17] /9599

OFFICIAL ON ARGENTINE PROGRAM--The former director of the Brazilian Nuclear Energy Corporation (NUCLEBRAS), engineer Joaquim Francisco de Carvalho, stated categorically that the transfer of technology is not taking place in the framework of the Brazilian-German nuclear agreement because the training programs offered constitute only another sale item to make the complete packages exported to the Third World even more profitable. On the one hand, we have research institutions, headed by the National Nuclear Energy Committee (CNEN), supporting an autonomous program. On the other, NUCLEBRAS is supporting a program of a commercial nature, seeking to obtain funds to build the largest number of power plants, even knowing that the demand for electricity can be met until the first decade of the next century by hydroelectric power plants that are three to four times cheaper. According to him, that explains the greater development of the Argentine nuclear technology and industry, with its Atucha-I plant having completed 10 years of operation. Unlike Brazil, he explained, Argentina did not sign any long-term commercial agreement with other countries and each project is carried out through independent competitive bids with separate packages. The detailed engineering services are turned over to Nuclar, an Argentine private company. As a result of the Argentine progress in that field, within a few years, the first reprocessing plant will be in operation with a reprocessing capacity of 5 tons of fuel from the Embalse nuclear plant, Argentina's second. According to Joaquim, that reprocessing will result, among other things, in various products, mainly 15 kilos per year of plutonium used to build the atomic bomb. [Text] [Rio de Janeiro O GLOBO in Portuguese 14 Oct 85 p 19] 12828/8711

PLANNING MINISTER CANCELS NUCLEAR PROJECT--There is good news from the Planning Ministry. Planning Minister Joao Sayad has decided to stop the construction of nuclear plant planned for southern Sao Paulo. The people living in (Perui) and Iguape will continue to breathe fresh air and drink pure water. Because of the lack of resources to build the project and because the Angra plant did not work, Nuclebras [Brazilian Nuclear Corporation, Inc.] will have no choice but to sell the land bought by the government in southern Sao Paulo. In addition to the deactivation of the Iguape project, Nuclebras is admitting that it must review the entire Brazilian nuclear program. To do so, it will create a commission of scientists and technicians from the Mines and Energy Ministry. [Text] [Sao Paulo Radio Bandeirantes in Portuguese 1500 GMT 9 Dec 85 PY] /6091

NO CONSTRUCTION IN SAO PAULO--NUCLEBRAS [Brazilian Nuclear Corporations, Inc.] President Licinio Seabra said in Rio de Janeiro today that NUCLEBRAS is not planning to build any nuclear plant in Sao Paulo state, and that it will sell the land bought for the construction of the Iguape 1 and 2 plants. He added that the enterprise has also withdrawn the legal actions involving the expropriation of the areas adjacent to the two construction sites. [Text] [Sao Paulo Radio Bandeirantes Network in Portuguese 0130 GMT 4 Dec 85 PY] /12913

CSO 5100/2024

ECUADOR

## BRIEFS

CPPS PROTESTS MURUROA EXPLOSION--Quito, 30 Nov (EFE)--The Permanent South Pacific Commission [CPPS] has sent a protest note to the French Government through that government's embassy in Ecuador over a new nuclear explosion at the Muroroa Atoll on 25 November. The CPPS, made up of Colombia, Chile, Ecuador, and Peru, affirmed in its communique that the atomic tests carried out by France in the Muroroa Atoll constitute a serious danger to marine life and natural resources. The note voices the commission's opposition to the nuclear explosions and demands that they be suspended immediately. The foreign ministers of Colombia, Chile, Ecuador, and Peru, in the declaration of Vina del Mar, signed in February 1984, reaffirmed the opposition of their governments to the nuclear explosions. [Text] [Madrid EFE in Spanish 1928 GMT 30 Nov 85] /8309

CSO: 5100/2025

# ARAB DEVELOPMENT OF NUCLEAR POWER DISCUSSED

Paris AL-MUSTAQBAL in Arabic 28 Sep 85 pp 44-46

[Text] In the shadows of the oil slump and the growing oil glut in the world market which shuts down Arab oil exports on the one hand and reduces oil revenues and leads to what resembles economic stagnation, or an economic collapse in the opinion of some observers, on the other, the Arab world is little by little broadening its entry into the field of nuclear energy, and so far the number of Arab nuclear nations is four, following Syria's recent entry into the club.

Most of these states have made or are making the necessary plans to acquire nuclear reactors that will generate electricity, with the exception of Iraq, which built a reactor, but when it was close to completion Israeli airplanes struck and destroyed it. Information about the Iraqi reactor and whether Iraq intends to rebuild it is conflicting, but there are those who say that Iraq is still trying to enter the nuclear field. The difficult economic circumstances under which it is living may stand in the way of achieving that goal, but they will ease shortly when it will be able to export 1.6 million barrels a day this month as previously announced by the Iraqi minister of petroleum, Mr Qasim Ahmad Taqi. That number means that Iraq's oil revenues will jump from about $10 billion to about $15 billion per year, if oil prices do not plunge dramatically. There are no details about Arab nuclear plans, but Arab officials stress that their use has only one purpose, which is to generate electrical energy, and to use their potential for medical and other purposes.

About these plans, available information says that five Arab states are trying to build reactors, as follows:

Egypt is the oldest Arab state in the field of nuclear energy, and that can be credited to the late President Jamal 'Abd-al-Nasir, who was anxious to import an experimental reactor in order to create a generation of Arab nuclear scientists. In fact, he was able to create a complete cadre, which later took part in building the Iraqi Tammuz reactor which Israel bombed. Egypt, which recently signed an agreement worth 600 million marks with West Germany to build a reactor in Abu Qayr on the northern cost, intends to implement an ambitious program that calls for the building of eight reactors, each with a capacity of 1,000 megawatts. They will be completed in 2005, and will be capable of meeting 40 percent of Egypt's electrical energy needs.

estimated to be about 2,600 tons, almost all of which are in Algeria. However, there are 6,650 more tons in Somalia, but the cost of extracting them varies between $80 and $130 per single kilogram. There are other sources whose economic feasibility has not been determined in Algeria (between 5,000 and 50,000 tons), Egypt (5,000 tons), Somalia (3,400 tons), and the Sudan (between 1,000 and 1,650 tons) and Saudia Arabia (500 tons).

In order to be able to compare the importance of the Arab reserves, the report says that world reserves are estimated at about 2,046,000,000 tons (not counting the socialist states), of which 1.47 billion tons cost less than $80 per kilo to extract. Thus while world reserves are counted in billions, Arab reserves are counted only in the thousands.

As for world production of uranium (with the exception of the socialist states), in 1983 it was about 39,000 tons, and consumption was 36,000 tons. Consumption in the year 2000 is not expected to exceed 65,000 tons, and that means that reserves now in existence will be enough for 40 years, but the report concentrates on two basic points:

First: That so far exploration operations have not seriously been carried out in all of the Arab lands and deserts, and that is why Arab reserves are small.

Secondly: That Arab phosphates contain 7 million tons of uranium. In this respect the report says: Arab phosphates are to be considered an important source of uranium if it can successfully be extracted economically (Jordan insists that it has succeeded in that) when they are converted to phosphoric acid by the wet method. Reasonably verifiable phosphate reserves in the Arab nation are about 60.8 billion tons, or 47 percent of world reserves. These reserves are in Morocco, Tunisia, Jordan, Syria, Algeria, Egypt and Iraq, and there are 1.6 billion tons recently discovered reserves in Jordan, Egypt, Mauritania and Saudia Arabia.

The report says: The average concentration of uranium in this phosphate varies between 50 to 120 parts per million, but it attains higher levels in Morocco, where it reaches 250 ppm; in Syria, where it reached 200 ppm; and in Jordan, 180 ppm. The theoretical reserves are estimated at about 7 million tons, but it is impossible for the Arabs to obtain this amount because the Arabs export the phosphate raw along with the uranium that it contains, and they convert a minor portion of it into phosphoric acid by the wet method. However, the amounts that can be extracted as a by-product from the units currently operating to produce phosphoric acid are about 1,483 tons annually, according to the 1982 figures. There are plans ready in Arab states to extract uranium from phosphate that will not be put into effect until their economic returns go up, and it seems that Jordan is a candidate for establishing the first plant for extracting uranium from phosphate, having made great strides in its studies of this plan.

The report, which was prepared by certain Arab atomic experts, comes to three important conclusions on the Arab nuclear future, which consider the greatest obstacles to be:

Iraq built the Tammuz reactor near Baghdad. The reactor was described as the most advanced in the world, and it seems that Israel was afraid that it would be used for military purposes, especially since the head of the cadre that runs the reactor was an Egyptian scientist, Dr. al-Mashad, who was known to be a first rate nuclear mind. He was assassinated in Paris in 1981 by Israeli intelligence. Information indicates that Saudi Arabia has undertaken to pay the costs of rebuilding the reactor, and also that France has promised to repair and finish building it. No other information is available, except that Iraq has signed a nuclear agreement with the Soviet Union.

Libya is making intensive efforts to buy advanced nuclear reactors. so far nothing is known about the results of those efforts.

Syria has signed an agreement with the Soviet Union, according to which the latter will train a Syrian nuclear cadre and set up a reactor for the production of electricity. France has tried to get on the Syrian track and it proposed a plan for a nuclear reactor in whose financing and benefits from the production of electricity Lebanon would share. The fate of the French plan is not known, but the bets are that Syria would not set up two projects with two different technologies.

Algeria has held nuclear talks with the Soviet Union on building a reactor, but nothing has been made public about the outcome of the talks, nor are the details and dimensions of the Algerian plan known.

The "Arab attack" to set up nuclear reactors came most probably after the following basic developments.

1. A rocking rate of increase, averaging 12 percent annually, in the consumption of electricity in Arab states.

2. A decrease in oil in some states such as Egypt and Algeria, something that would leave them exposed the day oil finally runs out and would force them to import oil at high prices in order to supply the electricity plants.

3. The desire by Arab states to diversify energy sources and not limit them to just oil and gas. This development ties in with the second one.

4. Preliminary exploration has indicated that the Arab states are rich in uranium present in their sands and rocks, and in phosphate as well.

5. A desire by Arab states to create cadres of nuclear scientists that would be used in two ways: peaceful, where the desired object would be the generation of electricity from the atom, and military, so that they would not be surprised some day by the Israeli atomic threat.

It is necessary to pause at the Arab uranium resources. In this respect, a report by the Organization of Arab Petroleum Exporting Countries says that the total reserves of the Arab states that have been discovered or are "reasonably verifiable," and whose extraction costs are less than $80 for 1 kilogram (this limit is the standard of the economic feasibility of extracting uranium), are

- Monopolization of the reactor industry, and the linking of political conditions to selling reactors.

- Israeli influence in the field of this industry, and Israeli attempts to prevent the Arab nation from developing its nuclear know-how.

- The huge capacity of the reactors available in the market and the inability of some Arab states to absorb it without cooperating with neighboring Arab countries by linking electrical networks (in other words, what is wanted is a minimum output from an Arab or regional unit).

One can arrive at a final conclusion based on the organization's report: the Arabs will not enter the nuclear industry field, or even any other field that has strategic dimensions, because of an Israeli-Western resolution to prevent the Arabs from developing and tokeep them as consumer societies on the margin of history. Is it reasonable that the Arabian deserts, whose area is several times that of western Europe, should have no uranium, when their neighbor Niger is considered a country that exports this crucial metal?

The other thing is that Arab governments do not believe in the principle of self reliance. Even now there are no Arab atomic cares, in spite of the abundance of Arab moneys in world banks and on the gambling tables. In the end, we will not build Arab nuclear, heavy, electronic or other industries except with Arab muscle and Arab brains, as the experiences of other nations show. As for the international consultative and technical companies which Arab governments often commission to study strategic affairs such as nuclear and heavy industries and iron and steel industries, they will continue to advise the Arabs not to set up such establishments. For example, there is a world campaign to cast doubt on the feasibility of Saudi petrochemical industries and other industries such as iron and steel that was suddenly launched by Israel and the West. This campaign aims at preventing other Arab states from establishing industries with this level of importance, not with air raids as Israel did, but by brain washing, especially the brains of educated Arabs, the wealthy, businessmen and bank managers.

The third thing is that the Arab summit conference that was held in Alexandria in 1964 decided, in accordance with a proposal by the late President 'Abd-al-Nasir, to establish an Arab agency for nuclear energy, on condition that the Egyptian scientific cadre be the nucleus of this agency. After the passage of 21 years since this decision one wonders: Why was the plan for this agency not implemented?

12547/13068
CSO:5100/4503

# MINISTERS VISIT ROOPPUR NUCLEAR POWER PROJECT

Dhaka THE NEW NATION in English 15 Oct 85 pp 1, 8

[Text] ROOPPUR (Pabna), Oct. 14 (BSS) : Minister for Energy and Mineral Resources Mr Anwar Hossain today said Bangladesh will request friendly countries for both financial and technological supports to implement the long-awaited Taka 2000 crore Rooppur Nuclear Power Project (RNPP).

Addressing a public meeting at the project premises this afternoon, the Minister said that the government was eager to materialise the project as it was essential for the energy development of the poorest country of the world.

Mr Anwar Hossain said although the financial involvement of the project is very high, the government will do its best. to arrange fund for it.

Presided over by Ishurdi upazila Chairman Mr Abdul Raqib, the meeting was also addressed, among others, by Works Minister Dr M A Matin, and Chairman, Bangladesh Atomic Energy Commission (BAEC), Dr Anwar Hossain.

The Energy Minister said that during the forthcoming visit to New York, President Ershad is expected to discuss bilateral issues with many heads of state including the question of funding RNPP.

Mr Hossain is expected to leave for New York later in the week to join President Ershad.

Referring to public apprehensions that the project will be shifted, the Energy Minister categorically said that the first nuclear power plant of the country will be set up at Rooppur.

Speaking on the occasion, Dr. Matin emphasised the need for implementation of Rooppur Nuclear Power Project and said the prosperity of the country will be greatly dependent on it.

Earlier, the ministers were taken round the project site which is situated on the bank of River Padma and adjacent to the Hardinge Bridge. About 260 acres of land were acquired 24 years ago in the village Rooppur for the project. Seventy two residential quarters have been built in the meantime which are lying idle. BAEC Chairman Dr. Hossain apprised the Energy. Minister of the project.

Earlier the ministers visited Ishurdi 132 K.V. grid substation. Later in the evening addressing the local press at Ishurdi upazila auditorium, Mr. Anwar Hossain said the role of the journalists in newly liberated country like ours has to be different from that of the developed ones. Works Minister informed the gathering that the site for the proposed club of Bangladesh Mufassil Sangbadik in Dhaka had been finalised and would be soon handed over to the office-bearers of the association.

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EGYPT

## BRIEFS

NUCLEAR COOPERATION WITH IRAQ, PAKISTAN--Abu Dhabi, 4 Dec (WAM)--The newspaper AL-ITTIHAD today reported that agreement has been reached to establish nuclear cooperation among Egypt, Iraq, and Pakistan. The paper stated that preliminary talks have actually been held to lay the bases of this cooperation. It has been agreed that cooperation will include the exchange of advanced technology, scientific research, experts, and scientific delegations among the three countries. [Text] [Abu Dhabi WAM in Arabic 0615 GMT 4 Dec 85] /8309

CSO: 5100/4603

# PAPERS REPORT DEDICATION OF BABHA RESEARCH REACTOR

## Bhabha Chief Briefs Press

New Delhi PATRIOT in English 12 Nov 85 p 5

[Excerpt]

**Bombay, Nov 11** — India is not a nuclear weapon country and has set an example by using the plutonium for peaceful purposes.

This was asserted by Dr Raja Ramanna, head of the Bhabha Atomic Research Centre, while briefing newsmen on the eve of Prime Minister Rajiv Gandhi's visit to the nation's prestigious nuclear project.

Dr Ramanna said "Ours is a wide programme on peaceful uses of atomic energy and we are concentrating on technology which could be passed on to industries. Even Pokhran explosion in 1974 was aimed at acquisition of capability to change the course of rivers, building dams, etc".

A newsman drew his attention to the report of syndicated US columnist Jack Anderson that BARC is developing hydrogen bomb. Dr Ramanna replied that Mr Anderson is not interested in scientific truth as he is out to sensationalise issues.

On another question over Pakistan's capability to acquire Islamic bomb, Dr Ramanna said that he knew about the developments in this regard in that country only from newspapers. Pakistan has one reactor and if the one at Kahuta is really big, then it may have weapon's capability.

He said the year has been good for India as Dhruva has gone critical and Prime Minister Rajiv Gandhi would soon rename Kalpakam after Mrs Indira Gandhi.

There was a touch of poignancy when Dr Ramanna made a reference to Mrs Indira Gandhi who he said was at the BARC on 8 October last year.

During the seventh Plan, Dr Ramanna said India would go in for building two more reactors of 500 MW capacity each. Tarapur is one of the sites where expansion is being considered, he said.

Dispelling the belief that the nuclear power was more expensive, Dr Ramanna said that the cost of nuclear power per unit is 42 paise whereas thermal power generation in Karnataka costs 75 paise per unit.

Replying to a question whether India proposes to export reactors Dr Ramanna said it was a difficult thing as it needed a lot of experience. He also revealed that more than 200 women scientists were busy in research work at the BARC.

Dhruva is the fifth 100 MW heavy water moderated and cooled thermal research reactor completely designed and built in India. The design of Dhruva incorporates a number of new features.

## Gandhi Speaks, Further Details

Madras THE HINDU in English 13 Nov 85 p 7

[Excerpt] Bombay, Nov 12--The Prime Minister, Mr Rajiv Gandhi, has said that India has no plans at present to build an atomb bomb. Nor did India possess the bomb, but it had every capability and was fully prepared to meet any eventuality, Mr Gandhi told reporters after dedicating to the nation the "Dhruva" research reactor at the Bhabha Atomic Research Centre here.

Asked if he felt it necessary for India to exercise the nuclear option, the Prime Minister said, "We could have made it if there had been a necessity."

In reply to a question about India's relations with Pakistan, Mr Gandhi said, "We are prepared to talk to them on everything including a friendship treaty."

Call to scientists: At the function to dedicate "Dhruva," the country's fifth research reactor, Mr Gandhi urged scientists to see that the nation became self-sufficient in nuclear energy, thereby reaching the level of the advanced countries. He told them that all the programmes envisaged by Pandit Nehru and Indira Gandhi in the nuclear field would be carried out.

Mr Gandhi said impressive strides had been made by the scientific community in the country in the field of nuclear science. Indian scientists had met all targets so far--"Dhruva" had gone critical and next month, he said, he would be visiting Kalpakkam, where the country's first fast breeder test reactor had gone critical at the nuclear research centre which would be renamed the Indira Gandhi Memorial Centre.

"We should take the spirit of the nuclear scientists to other scientific and industrial sectors and record similar successes," Mr Gandhi said.

Mr Gandhi said India wanted to make progress in all fields, and "we have to look ahead to identify the difficulties and to the past to isolate our mistakes."

He said tremendous progress had been made during the Sixth Plan in removing poverty. There was a 15 percent drop in the number of people living below the poverty line. This in turn created more demands and called for more infrastructure in power, communication and transport.

Complimenting the BARC personnel for helping the country to accelerate its economic development, the Prime Minister said they would have to work full force to achieve the targets in the nuclear field. He also called for optimum utilisation of the power plants, particularly the atomic energy plants which have a major role to play in meeting the country's power requirements. Researches in BARC and also in the new reactor would help India meet its power requirement.

The Prime Minister was received at BARC by the Atomic Energy Commission Chairman, Dr. Raja Ramanna, the BARC Director, Dr. P. K. Iyengar, the Chairman of the Nuclear Power Board, Dr. M. R. Srinivasan and the Chairman of the Atomic Energy Regulatory Board, Dr. A. K. Dey.

**Tool for research:** "Dhruva", a 100 MW heavy water moderated and cooled thermal research reactor, will produce a number of radio isotopes of high specific activity and serve as a tool for research in frontier areas in nuclear science and technology. When it is made fully operational, BARC will become one of the most extensive research reactor complexes in the world. With a maximum thermal neutron flux of 180 trillion neutrons per sq cm per second, "Dhruva" carries the distinction of being one of the high flux research reactors in the world.

With its new facilities, "Dhruva" is expected to give increased impetus to basic and applied research and to the production and application of radioisotopes in medicine, agriculture and industry.

Speaking to newsmen before the dedication ceremony, Dr. Ramanna said there was no plan to conduct any more nuclear tests like the one conducted at Pokhran in Rajasthan in 1947. "Our nuclear programme is entirely for peaceful purposes and we are not proposing to conduct any test explosion", he added.

Dr. Ramanna said the Pokhran test was done to experiment whether nuclear implosions could be used for peaceful purposes like building dams and deepening canals. "Now it appears that such implosions may not be an economical proposition for such purposes."

Asked about the reported move of Pakistan to make a nuclear bomb, Dr. Ramanna said India need not worry about Pakistan's programmes as "we are well advanced in the entire nuclear technology." He added "We have already six power reactors working, and another four under final stages of construction, while Pakistan has just one reactor functioning."

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CSO: 5150/0034

INDIA

GENERAL CITES REASONS FOR 'NOT GOING NUCLEAR'

Bombay THE TIMES OF INDIA in English 11, 12 Oct 85

[Article by Lt.-Gen. A.M. Vohra]

[11 Oct 85 p 8]

[Text] IT is often argued that as a pre-eminent regional power, India should acquire nuclear weapons capability to pull its wright in the international system. Since China went nuclear in 1964 and since Pakistan's quest for the bomb now seems beyond doubt, there are indeed military reasons for going nuclear. There is a strong nuclear lobby which advocates that the case for the bomb should not be considered in the context of Indo-Pakistan adversary relations alone. In any case, it cannot be gainsaid that Pakistan's effort in this field has rendered urgency to the issue as a nuclear threat can be met only by nuclear weapons.

Nuclear asymmetry downgrades the conventional deterrent of a non-nuclear weapons state and makes it vulnerable to nuclear blackmail. Therefore, the ability to deter a nuclear attack becomes the primary motivation for India to acquire nuclear weapons. In fact, this is the basic consideration for most threshold nuclear-nations. France, it is said, went nuclear primarily because it considered the U.S. umbrella unreliable.

The evidence advanced to establish that Pakistan is on the threshold of becoming a covert, if not an overt, nuclear weapons power is well known. There is the Cranston expose of June, 1984 pointing out that it has operated its clandestine plutonium reprocessing facility at PINSTECH and its uranium enrichment facility at Kahuta. Dr. A. Q. Khan, head of the Kahuta establishment announced in February 1984 that having achieved uranium enrichment capability, "the country will not be disappointed, if the green signal to make the bomb is given." Then there is the U.S. intelligence report, published in the *Newsweek* in December 1982, that China had provided Pakistan uranium as well as blueprints of the design of the bomb. The seizure at Houston of 50 KN 22 Krytrons reported in July, 1984, and a report in July, 1985 that Pakistan had successfully tested Krytron switches to produce non-nuclear explosions all point to the making of a bomb.

## Further Impetus

The question that needs to be asked is why Pakistan is acquiring nuclear weapons? Obviously it has been aware of India's work in the nuclear field and has been anxious not to be left behind. Nuclear weapon asymmetry is no more acceptable to Pakistan than it is to India. So well before India's PNE (peaceful nuclear explosion) in 1974, Pakistan had also started work to acquire nuclear capability. The PNE gave this a further impetus. In his article 'Pakistan and the Bomb', published in the *Survival* in November 1979, Khalilzad says: "Pakistan's desire to acquire nuclear weapons arises largely from a perception of a nuclear threat from India..." Akhatar Ali, in his 'Pakistan's Nuclear Dilemma' says that having the advantage of an "early start, size and sophistication", India would produce ballistic missiles against Pakistan's air delivery. "Pakistan would never be in a position to acquire a nuclear capability

matching that of India." Observing that there has been no militarily significant nuclear development since the 1974 explosion by India, he is of the opinion that India will "certainly launch a speedy nuclear programme of a sophisticated nature (which is well within its capabilities) once Pakistan carries out a nuclear explosion."

As long as neither India nor Pakistan goes covertly or overtly nuclear, conventional weapon deterrence is valid in the Indo-Pakistan context. With the U.S. interest to build Pakistan militarily, there is little scope for Pakistan to be apprehensive of any marked conventional weapon superiority on the part of India. Indeed, in view of the qualitative and quantitative arms supply from the U.S., India has had to take matching measures to ensure defence preparedness. In these circumstances, Pakistan would gain by acquiring nuclear weapons only if there was a chance of India accepting asymmetry. There is clear indication that this will not be the case. The Prime Minister's recent statements make this abundantly clear.

The problem of either Pakistan or India keeping a few bombs in the basement, that is, acquiring a covert ability, can only be dealt with by sincere talks on the nuclear weapon issue. India has emphasised its anxiety to keep nuclear weapons out of the region. The Prime Minister has urged the U.S. to impress upon and influence Pakistan on this count. There is, therefore, a strong case for earnest bilateral talks.

## Mutual Inspection

Pakistan's proposal of a Nuclear Free Zone (NFZ) and mutual inspection of nuclear facilities are not acceptable to India. Some Indian observers have proposed confidence-building by exchange of data on nuclear facilities, ratification by Pakistan of the Partial Test Ban Treaty of 1963, an agreement not to attack each other's nuclear facilities and such other preliminary measures in the media. It has been reported that the nuclear weapon issue was discussed officially during the visit of Sahibzada Yakub Khan in July last. This dialogue should be persistently pursued so that, starting with confidence-building measures, advance can be made towards the ultimate objective of an agreement banning nuclear weapons in South Asia.

There is indeed considerable force in the argument that, with China a nuclear power adjoining the subcontinent in the north, and nuclear weapons deployed in the Indian Ocean by the ever-present fleet of the super-powers, a NFZ in this region does not make sense. In any case, China's nuclear "have" status is certainly a factor when considering India's nuclear compulsions. Status, prestige, enhancement of its power base may have been China's considerations for going nuclear, but its primary motivation was undoubtedly to deter a nuclear threat from the USSR. The defensive nature of China's strategic force is also evident from its commitment to no first use and also its statement that it will not use nuclear weapons against a non-nuclear weapons state. New Delhi is no doubt aware of all this.

Although deterrence of a nuclear weapons threat is the primary consideration of the threshold states, it needs to be stated that those who take the nuclear option would be mistaken if they entertain any grandiose ideas about enhancing their power base with a small nuclear force (SNF). It would be true to say that a country which acquires nuclear weapon capability and becomes an overt nuclear weapons state (NWS) will not stop at a few crude bombs and would develop a minimum deterrent on, let us say, the French model. All the same such states have already been labelled as SNFs and will be considered second rate nuclear powers. Protagonists of the bomb argue that India with a nuclear weapons capability would add to its bargaining power vis-a-vis Pakistan and China, especially in territorial disputes, that is, Kashmir and Aksaichin. This is far from the truth as China is already a NWS and Pakistan would also become one should India exercise its option for the bomb.

## No Rational Use

As stated earlier, no rational use can be made of nuclear weapons in a state of hostility between NWSs. Resort to conventional weapons is the only course open to them in such an eventuality. The nuclear bomb is not just another weapon. The devastation that result from the heat, blast and radiation effects of a single nuclear explosion of a small yield of 12 to 13 kiloton is known from the Hiroshima experience. The port city was ruined instantaneously and 130,000 people were killed outright or died of their injuries in the next three months.

In the present context, with warheads of megaton (MT) range, and a general consensus that a nuclear war cannot be limited or controlled, an exchange would lead to a universal catastrophe. The study by Carl Sagan and 24 other U.S. scientists has come to the conclusion that an explosive yield of 100 MT will produce a nuclear winter exceeding 70 days in most parts of the globe with temperatures below minus 20 degrees C. What is, therefore, required is to renounce first use as an initial step towards general nuclear disarmament.

When the Nuclear Non-Proliferation Treaty was first presented, NNWS held a conference (1968) and asked for more specific undertakings in nuclear arms control, a comprehensive ban on testing, a halt to development of weapons and delivery systems and reduction followed by graduated elimination of atomic weapon stockpiles. India has maintained this stand and issued a joint appeal on May 22, 1984, along with Sweden, Greece, Tanzania, Mexico and Argentina representing four continents, to the five nuclear states to halt all testing, production and deployment of nuclear weapons and delivery systems and to follow it up by substantial reduction in nuclear forces. These six countries held a summit in Delhi on January 28 this year and renewed their appeal. India cannot ignore the logic of its plighted word.

[12 Oct 85 p 9]

[Text]

IN view of the nature of the weapon and India's persistent stand for its abolition, the adoption of the course suggested by the protagonists of the bomb does seem incongruous even when taken in frustration at its inability to influence a total ban on nuclear weapons. Moreover, the requirements of national security can, in the forseeable future, be met by conventional weapon deterrence.

A rational option for India is to be wary of the doubtful advantages of status, prestige or the enhanced power base and address itself to the problem of Pakistan's becoming a covert nuclear weapons power by holding bilateral talks on this issue.

It is true that at about four per cent of the GNP, India's defence expenditure today is one of the lowest. Nevertheless, it is about 17 per cent of its total federal budget and has been going up every year. It has thus risen from Rs. 4,651 crores in 1981-82 (actual) to Rs. 7,686 crores in 1985-86 (estimate). At this rate of increase, the defence expenditure during the seventh Plan period is estimated to be Rs. 50,000 crores.

A fairly low expenditure in terms of percentage of the GNP is of little comfort when India is constantly faced with a problem of resources. It is pertinent that India's major objection to the arms supply by the U.S. to Pakistan is that, as a result, it has to spend more than it would like to on defence.

## Defence Spending

In these circumstances, if India can, it should avoid adding the nuclear weapon dimension to its defence expenditure. Even if India were to go nuclear, its conventional forces will continue to be maintained and modernised. There will be no reduction in defence expenditure on this count.

Some estimates have been made of the cost of India going nuclear. One such estimate gives the cost at 1982 prices as Rs. 3,600 crores per year for the next 10 to 15 years for a modest programme. Another estimate made in 1983 indicates another 4 per cent of the GNP.

Should it go nuclear, it would, over a period of 10 years or so, develop an arsenal of air deliverable bombs, MRBMs and SLBMs as France has done.

At present, the Cirus reactor can provide India with 9.4 kg. of safeguards-free plutonium a year. The recently commissioned Dhruva will provide another 23.4 kg. of Pu 239 a year. If this entire quantity was available for nuclear weapons, only about 3 bombs a year could be produced. Therefore, should India go in for nuclear weapons, it would need a 500-MW breeder reactor devoted to weapon production. In addition, separate deep penetration aircraft for air delivery, long range interceptor aircraft, ground-based radar, command, control, communications and intelligence satellites and a launch warning satellite will all have to be provided for, apart from MRBM and missible submarines.

The cost of developing nuclear weapon capability is not something to be scoffed at. Even after the first ten years, the cost of maintaining and marginally adding to the arsenal would be no less than Rs. 5,000 crores a year. This is what France is reported to be spending currently.

Quite often in discussions relating to national security, it is stated that no amount is too much for defence preparedness.

## First Use

Another argument that is put forward is that nuclear forces are cheaper in providing defence. Ignoring the cost of acquiring initial capability and its build-up over the years, the unwillingness of the U.S. to renounce first use is cited to suggest that it finds nuclear weapons less expensive than the cost of strengthening NATOs conventional forces. Similarly, China's recent decision to strengthen its nuclear forces is quoted in support of the claim that it finds this course more cost-effective than modernisation of its almost four-million-strong conventional forces whose weapons and equipment have been neglected for decades.

It needs to be remembered that even in the case of NWS, conventional forces are not redundant and may well be the sole actors in the event of hostilities. Secondly, the recurring cost of an established nuclear arsenal is not a correct indication of the burden on resources of acquiring such a capability.

The cost of India going nuclear will be heavy and would double the expenditure on defence to about eight per cent of the GNP. However, the main argument against going nuclear is that it is a dimension of defence which has never been necessary so far and India should take the initiative for making it permanently irrelevant at least in the regional context as a first step.

Politically, India's decision to opt for the bomb is likely to lead to further instability in South Asia. Pakistan's strategy of external dependence has given enough scope for outside interference. With India as a NWS, other neighbours may well move under the umbrella of other external powers.

/8309
CSO: 5150/19

INDIA

# PAPERS GIVE DETAILS ON FAST BREEDER REACTOR

## Development Chronology Noted

Madras THE HINDU in English 17 Oct 85 p 7

[Text]

MADRAS, Oct. 16.

The 14 MW fast breeder test reactor (FBTR) at Kalpakkam, the first of a new generation of nuclear reactors, is set to "go critical" this week-end.

Loading of the indigenously developed plutonium-uranium carbide fuel has proceeded smoothly this past fortnight, and when the last of the fuel rods or sub-assemblies, as they are called, is lowered into the reactor, scientists expect sufficient neutron activity to be generated within the reactor to produce a self-sustaining chain reaction.

When that is achieved—it could happen some time on Friday or Saturday, according to current indications—India will become only the seventh nation in the world, and the first in the developing world, to operate a fast breeder reactor. Ten fast breeder reactors are currently in operation in the U.S., the Soviet Union, France, Japan, Britain and West Germany. Most of them, like the FBTR at Kalpakkam, have been experimental, built to test fuels, materials and reactor components. But the near-commercial size Soviet BN-600 has been operational for almost five years and France's 1242 MW Superhenix reactor, the world's largest fast breeder reactor, began generating electricity last month and is due to supply power commercially to the national grid early next year.

**Low power run:** Initially, the FBTR will be run at low power to enable scientists to conduct reactor physics experiments. But when the steam generator and the turbine are coupled some time in mid-1986, the reactor will be able to produce about 14 MW of electrical energy.

The commissioning exercises, which started in May 1984 with the charging of sodium, the metal used as a coolant and a heat transport medium, might have ended earlier but for a leak of sodium-potassium alloy from the system during one of the trials. The leak necessitated redesign of some equipment, and stalled progress for over two and a half months.

**Indigenous effort:** Although France initially did provide the basic designs and even samples of certain components for the Rs. 68 crore FBTR, modifications of the designs, and the fabrication of the various components, were done indigenously.

All the expertise needed to handle sodium was developed at the Reactor Research Centre, Kalpakkam. Sodium, which is solid at room temperature but flows like water at over 98°C is a highly reactive substance. If exposed to either air or moisture, it reacts explosively and catches fire. In addition the sodium has to be pure—impurities can measure no more than five parts per million—and therefore besides a pre-loading purification, there is an on-line purification system to keep contamination within limits.

For all the exacting handling techniques it calls for, sodium is the preferred material in a fast reactor. While coal-fired thermal stations and conventional nuclear stations make do with water as a heat transport medium, fast breeders which generate up to 10 times as much energy from every tonne of fuel, require the higher efficiency that sodium affords to evacuate heat.

**Carbide fuel:** One other significant achievement of Indian scientists was the development of the fuel. Fast breeders elsewhere in the world use an enriched uranium-plutonium oxide combination. But India, without the facility to enrich uranium or the freedom to buy stocks from abroad without pre-conditions, chose to develop a plutonium-natural uranium carbide combination. India mines natural uranium and as the conventional heavy water reactors do turn out plutonium as a by-product, this fuel has a fully indigenous source.

The speciality of the fast breeder reactor is, as the name suggests, its breeding capability, its ability to produce more of the potent fuel, plutonium, than it consumes. In a conventional reactor such as the one at the Madras Atomic Power Project, every kg. of natural uranium

used produces 0.8 kg of plutonium. But in a fast breeder, every kg of plutonium irradiated generates 1.2 kg of plutonium, the extra plutonium materialising from the natural uranium component, which gets transformed within the reactor. The plutonium churned out can be used to power another reactor.

**'Better breeding ratio':** "The advantage of the carbide fuel is that it has a better breeding ratio than the oxide fuel", says Dr. P. K. Iyengar, Director of the Bhabha Atomic Research Centre, which developed the fuel and devised the technique to turn it out as pellets. "There could be some drawbacks especially with regard to the reprocessing of the spent fuel", he conceded, but pointed out that it was perhaps the first time in the world that an entire fuel core of a test reactor was being made up of carbide fuel. "The rest of the scientific community in the world will be watching its performance with great interest", he told THE HINDU.

The special breeding capability has led experts to predict that fast breeders could become the major source of India's energy in the next century when fossil fuel could become scarce.

The success of the fast breeder is reckoned to be crucial inasmuchas the Department of Atomic Energy can set up no more than 15,000 MW of heavy water reactor capacity given the known reserves of uranium in the country. If things go as planned about 10,000 MW of capacity will have been established by the year 2000, which will leave very little for the next century when energy demands are likely to rise even more steeply.

On the other hand the fast breeder reactor will enable a fuller exploitation of the energy potential in uranium, and theoretically can sustain a power generation capacity of about 350,000 MW, ten times the nation's existing generation capacity.

**Guaranteed by God:** When engineers levelled the site south of the famed shore temple at Mahabalipuram in 1972 to erect the FBTR building, they found an old Angalaparameshwari Amman temple right in the middle. But they chose to leave the temple, which is said to be date back to the Pallava period, undisturbed, and it today stands in a little alcove on the eastern face of the building. Many among the staff set much store by and take much inspiration from the goddess. "This is a reactor guaranteed by God", one of the faithful is quoted as saying. In a pioneering venture such as this, a heavenly guarantee must be highly reassuring.

## Indigenously Developed Fuel Rods

Bombay THE TIMES OF INDIA in English 18 Oct 85 p 1

[Article by S. Dharmarajan]

[Text]

**MADRAS, October 17.**

THE 14 MW Fast Breeder Test Reactor (FBTR) at Kalpakkam here is expected to go critical at around 6 p.m. tomorrow.

Criticality, representing the first phase of a reactor, occurs when the nuclear chain reaction takes place at a constant rate and is sustained.

The reactor will go critical when the last of the sub-assemblies (fuel rods) is lowered tomorrow evening and neutron activity is generated within. Loading of the fuel has gone on for two weeks now.

The FBTR uses a plutonium-uranium carbide fuel, unlike the oxide fuel used elsewhere in the world.

Attention is focussed on the reactor, as the success of the FBTR technology will give a boost to the country's nuclear energy programme.

The department of atomic energy can set up just 15,000 MW of heavy reactor capacity with the known reserves of uranium in the country, whereas with the FBTR technology it could have a better utilisation of the energy potential of uranium and, theoretically, can sustain a power generation capacity of about 350,000 MW.

The FBTR is considered the way for the nuclear power programme to make a big contribution to the country's energy pool.

With the FBTR achieving criticality, India will become the first country among developing nations — and the seventh in the world — to operate a fast breeder reactor, after the U.S., the Soviet Union, France, Japan, the U.K. and West Germany.

The Rs. 68-crore reactor at Kalpakkam, adjoining the Madras Atomic Power Project (MAPP) units (there are two of 235 MW each), uses indigenously developed fuel rods. The FBTR is so called because of its ability to produce more of the potent fuel — plutonium — than it consumes.

France provided the basic designs and samples of certain components, but modifications of the designs and fabrication of components were done indigenously. The technology to handle sodium, the highly volatile coolant, was developed at the reactor research centre at Kalpakkam.

Criticality of the reactor has been delayed by about three months by a leak of sodium-potassium alloy from the system during trials, necessitating re-designing of some equipment.

The reactor will be run initially at

low power to enable scientists to carry out reactor physics experiments. It will start producing about 14 MW of power when the steam generator and the turbine are coupled to it sometime in mid-1986.

TOINS adds from Delhi: The event, involving 14 years of effort by Indian scientists and engineers, will outshine the two recent advances in the country's nuclear plan, the commissioning of the research reactor "Dhruva" and the second unit of the Madras Atomic Power Station.

When the fast breeder test reactor was conceived, India had hoped to get enriched uranium from France but it did not seek the French fuel in view of the safeguard complications and dangers of dependence.

Also, the mixed carbide fuel, with its higher breeding ratio, is expected to be more efficient than enriched uranium, according to Dr. Raja Ramanna, chairman of the Atomic Energy Commission, who left New Delhi on Thursday for Madras to be present at Kalpakkam when the reactor goes critical.

According to Dr. Ramanna, FBTR is a very important experiment from the point of view of economics, breeding technology and the future of reactors.

Since the fast breeders produce more fuel than they consume, they are an essential element of India's power plan. A breeder may require as little as 1.3 tonnes of uranium per million kw year of power compared to 171 tonnes required for the present water cooled reactors.

India is setting up a string of nuclear power plants based on natural uranium as fuel and heavy water as moderator but this programme cannot be stretched too far since the natural uranium resources are limited.

This limitation can be removed by breeders using plutonium 239 and depleted uranium both from the first generation reactors. To stretch the programme even further, India has planned in the third phase a breeder which could convert the abundantly available thorium into fissile material.

The natural uranium-fuelled, pressurised heavy water reactors, which produce power and plutonium as a by-product constitute the first stage of the nuclear fuel cycle. The second stage reactors would be plutonium fuelled fast breeders producing power and more plutonium as well as uranium 233 from thorium in the blanket. The third stage breeder reactors would be based on self-sustaining thorium-uranium-233 cycle.

## 'HINDU' Analyst Comments

Madras THE HINDU in English 19 Oct 85 p 1

[Article by G.K. Reddy]

[Text]

NEW DELHI, Oct. 18.

After the Pokhran explosion in 1974, no single event in India's nuclear development has evoked such great excitement in the foreign diplomatic community as the successful tests that are being carried out by the country's atomic scientists with the fast breeder test reactor at Kalpakkam.

The scientific attaches of various missions have been seeking details from the departments concerned about this remarkable achievement by a developing nation, while the political experts are assessing the wider implications of this spectacular breakthrough by India in nuclear development.

**Ultimate intention:** What is considered really creditable is that the Indian scientists have succeeded in developing indigenously mixed carbide fuel with a plutonium and uranium base, instead of enriched uranium which India proposed to obtain from France at one stage for this experimental fast breeder programme. The ultimate intention is to use thorium which can be extracted from monazite sand as fuel when fast breeder reactors go into commercial production in due course.

There are only six countries—the U.S., Soviet Union, France, Britain, West Germany and Japan—that are ahead of India in fast breeder technology which is going to be the main source of nuclear power in future. But the Indian success in reaching criticality at the experimental reactor in Kalpakkam is considered quite creditable.

**Pak. canard:** Radio Pakistan which picked up the news from an AIR broadcast is reported to be spreading the canard that India which has already achieved nuclear capability is well set to embark on a weapons programme at short notice with the commissioning of the 50 MW research reactor at Trombay a few months back, followed by the breakthrough in fast breeder technology at Kalpakkam.

Whatever the technical complexities of it, the very fact that India has crossed the nuclear barriers in this highly sophisticated sphere will go a long way in enhancing its international importance.

/8309
CSO: 5150/22

INDIA

KALPAKKAM REACTOR BROUGHT TO CRITICALITY SECOND TIME

Madras THE HINDU in English 20 Oct 85 p 1

[Text]

MADRAS, Oct. 19.

Scientists at Kalpakkam today again enacted last night's exercise that brought the 14 MW Fast Breeder Test Reactor (FBTR) to criticality; but did it five times quicker, showing what success can do for the morale.

Mr. C. V. Sundaram, Director of the Reactor Research Centre, said the approach to criticality was accomplished in just one hour. It took five on Friday night.

Last night, after the reactor went critical, Dr. Raja Ramanna, Chairman of the Atomic Energy Commission, told newsmen scientists had been extra careful because it was the first time in the world that a plutonium-natural uranium carbide fuel was being used.

Initially, since the French had agreed to cooperate and had even passed on the designs, the reactor was geared for enriched uranium-plutonium fuel. "But seven years ago, it became clear that we would not be able to import the fuel—the charges were too high—and the problem of safeguards was also coming in," Dr. Ramanna recalled.

Indian scientists, however, had said a new fuel could be fabricated, and now "we have done it", he noted. The French were appreciative of the Indian effort and were looking forward to studying the FBTR experience.

For the next century: The fast breeder reactor, which Dr. Ramanna calls "the reactor for the next century", represents the second of the three-phase national atomic energy programme. "Our whole programme is based on the use of plutonium produced by the heavy water reactors in the fast breeder reactors, and then the irradiation of thorium in the fast breeder reactors for use in the thorium reactor," he said.

The FBTR will be the test bed for deeper studies on thorium, a mineral that exists in substantial quantities in the country and offers scope for generating even more energy than uranium can do.

Plans call for clothing the FBTR fuel core with a blanket of thorium oxide. In the nuclear chain reaction, the neutrons that fail to hit and split the atom will fly off into the thorium blanket. When thorium, normally a non-fissile element, absorbs these neutrons, it changes into the highly fissile isotope of uranium, U-233. And there lies the seed of the thorium phase of the nuclear power programme, slated for the second half of the next century.

/6091
CSO: 5150/0023

# NEW KALPAKKAM REACTOR PAVES WAY FOR NEW PROGRAM

Calcutta THE TELEGRAPH in English 20 Oct 85 p 5

[Text] Madras, Oct. 19 (PTI): The successful commissioning of the Rs 68-crore, 40 megawatt thermal (MWT) fast breeder test reactor (FBTR) at Kalpakkam, 60 km from here, yesterday is considered an important landmark in India's atomic energy programme as the commissioning of its first fission reactor at Tarapur in 1969.

The ability to achieve criticality within the predicted time demonstrated that Indian scientists can indigenously develop a reactor and produce fuel for it in a field where technology transfer is next to impossible. Also, the achievement, the climax of a 14-year effort to perfect a new technology, has put India's self-reliance programme on a firm keel and promises an entirely new generation of reactors.

The FBTR has paved the way for a more ambitious programme of erecting a Rs 750 crore (today's prices) prototype fast breeder reactor (PFBR), for which preliminary designs have been completed and submitted to the Department of Atomic Energy (DAE) for approval, the Reactor research centre (RCC) director, Dr C.V. Sundaram, told PTI.

Dr Sundaram said while RRC scientists were now working on details of the PFBR, the DAE was identifying industries in the private and public sector which would manufacture or supply some of the critical components needed. The industries may take another five years to do so.

Design changes in the PFBR include an enlarged reactor vessel kept in a vertical configuration, instead of the horizontal configuration in conventional reactors, and containing some critical equipment.

Dr Sundaram said the development of the fast breeder reactors (FBRs) was important as the depletion of India's coal and uranium resources would place tremendous pressure on power generation to meet increasing demand.

Dr Sundaram said the uranium reserves, estimated at 73,000 tonnes, would permit installation of 15,000 megawatt electrical (MWE) power generation capacity in conventional pressurised heavy water reactors (PHWRS), which use heavy water as a moderator.

The plutonium derived from these PHWRS could be effectively deployed, along with depleted uranium (U-238), in FBRs, setting up of a power generation capacity as high as 350,000 MWE, he said. Thus the early establishment of commercial FBRs was essential to relieve pressure on the nation's limited coal stock, which was too valuable a natural resource to be squandered away in just heat generation, he added.

Dr Sundaram said FBRs would also effectively bridge the time gap between the currently available energy technologies and the more distant technologies like nuclear fusion and solar or wind energy.

The DAE's 15-year perspective plan to generate 10,000 mwe of power by the end of this century will also accelerate the FBR programme, as it will yield enough plutonium to set up 1,000 mwe FBRs every year. In the next century, India would have gone in for liquid metal-cooled fast breeder reactors (LMFBRS), pending successful trials of the PFBR, using a second generation reactor that will use Uranium 233 extracted from thorium oxide, abundantly available a long India's southern and eastern coasts.

These reserves can meet the

country's entire demand for electrical energy by end of the next century, RRC scientists told PTI.

Also, as Dr P.R. Roy, head of the metallurgy group and head of the radio metallurgy division in the Bhabha Atomic Research Centre (BARC) points out, the mixed uranium plutonium monocarbide, successfully tested in the FBTR, will provide the clues for the fuel in more advanced LMFBRS, expected to come into commercial operation by the end of this decade.

He said a tonne of fuel in a LMFBR would produce five to 10 times more energy than in a conventional light water reactor (LWR) or PHWR.

Dr S. Paranjpe, director of the RRC reactor group, said LMFBRS were among the safest in the world. One of its advantages was that the reactor's pressures are very low as compared to conventional reactors. A negative temperature coefficient also reduced the risk of nuclear accidents.

The margin in temperatures for a nuclear accident in a conventional reactor was only about 50 degrees Centigrade while in a LMFBR it was over 300 degrees Centigrade. This makes the dreaded core disassembly accidents physically impossible," he said.

The hazards of sodium fire, sodium water reactions were also minimised in the LMFBR. The core vessel and coolants were double-walled by strong non-corrosive stainless steel and an inert gas was filled in between. In the event of a sodium leak, it was trapped by the gas and a warning signal was given to the control room. Radioactive discharges were also very low, he added.

/8309
CSO: 5150/24

INDIA

OPPOSITION POLICY ON NUCLEAR OPTION DISCUSSED

Calcutta THE STATESMAN in English 16 Oct 85 pp 1, 9

[Text] New Delhi, Oct 15--While three national Opposition parties would like India to be free to exercise the nuclear option, two other non-Communist parties are reviewing their position on formulating a policy on an Indian deterrent in view of Pakistan going nuclear.

The three parties to take a stand are the Janata Party, BJP and the Lok Sal, while the Congress (Socialist) and the Telugu Desam, with 27 members in the Lok Sabha, have yet to define their position.

The BJP would like India to have a nuclear deterrent and passed a resolution to this effect at its national executive meeting in July at Bhopal. The Janata Party, after much debate last week decided that the country should exercise the nuclear options in "full freedom."

The Lok Del president, Mr Charan Singh, has gone on record to say that he would like India to make the bomb before a neighbour did it.

On the other hand the Congress (S) has adhered to the Congress policy of nuclear renunciation so far, but its general secretary, Mr K.P. Unnikrishnan, said the party would have to review the question next month at its working committee meeting in view of developments on the sub-continent, Mr C. Lakshmanna, secretary of the Telugu Desam Parliamentary Party, will raise the question with the party leadership during his five day visit to Hyderabad.

Meanwhile, Mr L.K. Advani BJP general secretary, denied the charge by one of the Congress (I) general secretaries, Mr. Jitendra Prasad, that the BJP was trying to "belittle the nuclear threat from Pakistan."

He said: "The BJP is the first party to take cognizance of Pakistan's resolve to go nuclear. By a resolution the BJP has demanded that India should develop a nuclear deterrent of its own.

"The BJP has never tried to underplay the Pakistani threat. What the party president, Mr Atal Behari Vajpayee, has criticized is that the Prime Minister

of such a great country as ours should be going round the world making speeches betraying panic and acting as a supplicant seeking Washington's and Moscow's intervention against Pakistan's nuclear threat. India, we believe, can meet, Pakistan entirely on its own."

He recalled that Mr Merarji Desai had, as the Janata Prime Minister, said that India was not going to make the bomb. But he would not let Pakistan make it either, implying that "we will destroy it."

It is learnt that the Janata Party National Council, at its meeting in Deosthali last week, had a heated discussion on the nuclear question and a draft almost renouncing the nuclear option, was rejected after strong objections by Mr Krishan Kant, who had been lobbying for two decades even as a Congressman before he left the ruling party. Even a second draft, which did not satisfy him and a number of other leaders of the party, was rejected.

The final resolution that emerged said: While the Congress (I) is trying to divert the attention of the people from their life of misery, poverty, unemployment and inflation by alluring them with post-dated cheques on the next century prosperity, it continues to mislead them by referring time and again to the possibility of invasion across our frontier. It might be that the Congress (I) in order to hide its failure on the economic and social front feels the need to cry wolf. But one might cry wolf too often. Janata never indulged in this game and maintained the friendliest relations with Pakistan as well as China, but it did not slacken its guard even for a moment.

Mr Krishan Kant and some others objected to a formulation which reportedly suggested that India was responsible for Pakistan's plan to go nuclear. He pointed out that the draft was contrary to a party resolution, adopted in 1981 at Bangalore, despite Mr Desai's opposition, that India would have to go nuclear if Palistan made the bomb. He recalled that Mr Vajpayee, the then External Affairs Minister, had announced in Parliament in April 1979, that India had information that Pakistan was going nuclear.

/8309
CSO: 5150/20

INDIA

SOVIET, U.S. NUCLEAR TEST RECORD COMPARED

Bombay THE TIMES OF INDIA in English 31 Oct 85 p 8

[Editorial]

[Text] The six-nation call to the superpowers for a 12-month moratorium on atomic weapon tests marks a step forward in the worldwide campaign for nuclear disarmament. The group, consisting of the heads of state or government of Argentina, Greece, Mexico, Sweden, Tanzania and India issued its first appeal in May 1984, for a halt to the arms race and nuclear sanity. The initiative generated enthusiasm on both sides of the East-West divide. The Pope blessed it. In the U.S., nearly 150 Congressmen and Senators wrote to President Reagan in its support. In West Germany, almost an equal number of the members of Bundestag signed a letter endorsing its broad objectives. The Soviet government did the same through an official statement. The impact of six-nation Delhi declaration in January last was even greater. It gave an impetus to the anti-nuclear and disarmament movements not only in the Americas and Western Europe but also in the countries belonging to the Soviet bloc. The sceptics who argue that such pious pleas invariably fall on the deaf ears of those who have their fingers on the nuclear trigger are both right and wrong. It is true that the nuclear non-proliferation treaty (NPT), signed in 1970, has failed even to moderate the development and stockpiling of ever more lethal weapons of mass destruction by the nuclear powers; indeed, despite 12 arms control agreements since, the superpowers alone have tripled the number of warheads in their possession. But, it does not follow that they are altogether impervious to the force of public opinion in their own countries or elsewhere. In May they agreed to resume the arms control talks in Geneva. In September, the Soviet Union proposed a 50 percent cut in strategic offensive weapons in return for restrictions on President Reagan's so-called strategic defence initiative or "Star Wars." Mr Reagan has "welcomed" the Soviet move and, along with American counter-proposals, it would be the basis of negotiations at the superpower summit next month.

In view of all this, the six-nation proposal for a 12-month moratorium on nuclear tests is no surprise. In fact, towards the end of July, Moscow had firmly committed itself to stop all tests unilaterally for almost five months--from August 6 to January 1--and for as long thereafter as the U.S. refrained from testing. Predictably, Moscow has now reaffirmed

its earlier pledge. It has also shown commendable flexibility on American demands for on-site verification by suggesting that a committee of experts could be set up for the purpose. The U.S. has tried to belittle the Soviet initiative by alleging that the Russians had earlier conducted an unusually large number of tests. This is just not true. According to the U.S. department of energy, America has conducted nine tests and the Soviet Union only four in all of 1985. The impression is irresistible that Moscow is now serious about halting, if not reversing, the nuclear arms race. The six-nation move would have served a useful purpose if it induces a matching American response.

/9317
CSO: 5150/0026

U.S. SAID TO THREATEN INDIA WITH NUCLEAR PAKISTAN

Bombay THE TIMES OF INDIA in English 1 Nov 85 p 8

[Article by G.S. Misra]

[Text]

BY now two things are clear. First, it is widely believed that Pakistan has all but built a nuclear bomb and is in a position to test it if it wants to. And secondly, the U.S. has turned a blind eye to this development and ignored Mr. Rajiv Gandhi's repeated appeals to it to use its influence in Islamabad to prevent Pakistan from developing nuclear weapons.

In reality what the Prime Minister has been asking the U.S. to do is to meet its own commitments as embodied in its Nuclear Non-Proliferation Act and in its repeated assurances that the massive supply of military hardware to Islamabad was designed to dissuade Pakistan from going nuclear.

Instead of making good its commitments, the U.S. has started urging India to consider "regional initiatives to avert nuclear competition". What does all this mean?

First of all, it sends a clear signal to Pakistan and the rest of the world, including India, that acquisition of nuclear weapons by Pakistan would not be a matter of too serious a concern to the U.S. and would not jeopardise the special strategic relationship between the two countries. Indeed, it is liable to be interpreted by Pakistan as a "go-ahead" signal to develop nuclear weapons. Secondly, it amounts to a rejection of India's position that the U.S. should in keeping with its past commitments on the non-proliferation issue, exert pressure on Pakistan to prevent it from developing nuclear weapons. In effect, it is a reversal of a position tenaciously maintained by the U.S. during three successive administrations—those of Mr. Nixon, Mr. Carter and, until recently, Mr. Reagan's.

One of the assumptions on which the U.S. policy is based is the acceptance of the pernicious principle of parity between Pakistan and India, a country seven times the former's size. Secondly, it implicitly contends that the local powers — India and Pakistan — are engaged in a nuclear competition. The argument seems to be that India carried out a nuclear explosion in 1974; therefore, Pakistan cannot but follow suit and that it is for India to reach an agreement with Pakistan or face the consequences of a nuclear-armed Pakistan.

## Nuclear Safeguards

It may not, therefore, be too far-fetched to conclude that far from exerting pressure on Pakistan not to develop nuclear weapons, the U.S. appears to be using the threat of a nuclear-armed Pakistan to exert pressure on India to accept the U.S. scheme of things under the gift-wrapping of Pakistani initiatives.

For years, the U.S. tried to use the supply of nuclear fuel for Tarapore to pressure India to accept full-scale safeguards. That having proved unavailing, it seemingly yielded some ground. But simultaneously the Americans got hold of a new instrument of pressure — nuclear weapons in the hands of the military rulers of Pakistan.

It is important to be clear about the meaning of regional initiatives. The U.S. support for regional initiatives simply means support to various moves initiated by Pakistan as a cover for its nuclear weapons development programme.

Addressing the U.N. general assembly recently, Pakistan's foreign minister, Sahabzada Yakub Khan,

said his government has offered to India (i) simultaneous signature of the NPT, (ii) simultaneous acceptance of full scope safeguards, (iii) bilateral inspection of each other's nuclear facilities, and (iv) binding declaration by all South Asian countries renouncing acquisition or manufacture of nuclear weapons. This nearly sumps up the Pak initiatives on the nuclear issue. Support to regional initiatives is thus tantamount to support to Pakistani proposals, for no other country in the region has taken any initiative on this issue.

Of course, this should not have come as a complete surprise as Pakistani proposals on the nuclear issue are in complete conformity with U.S. policies.

Moreover, a significant shift in U.S. policy on non-proliferation was inherent in the waiver of the Symington amendment in favour of Pakistan. It should not be forgotten that the U.S. has not always applied uniform standards of conduct to nuclear threshold countries.

For example, Israel has an impressive stockpile of nuclear weapons. But if the U.S. exerted any pressure on Israel on this issue, it has not been made public. Therefore, the Indian expectation that since we were subjected to enormous pressure by the U.S. after the PNE, Pakistan too, would have to pay a price for her nuclear weapon programme is mistaken. Pakistan is the "most allied ally" of the U.S. India is not. Nuclear weapons in the hands of Pakistan may not, therefore, be viewed as inimical to U.S. security interests.

## Regional Initiatives

That apart, nuclear weapons are extra-regional in nature, reach and impact. A Pakistani nuclear weapon can be used not only against Delhi and Bombay but also against Teheran, Tel Aviv, Tashkent and Kabul or, for that matter, even Chengtu. Therefore, in addition to India and Pakistan, other countries would be interested in or concerned over, the nuclear weapons in Pakistani hands.

Is it the U.S. view that the "regional initiatives" should embrace not only India, Pakistan and other South Asian countries but also the USSR, China, Israel, Britain and France?

And what about the U.S. itself? A single U.S. nuclear submarine in the Indian Ocean has more destructive power than anything that India and Pakistan can hope to develop in the next decade even if they embark upon an unrestrained "nuclear competition".

It can no longer be claimed that U.S. nuclear weapons do not pose any threat. Only the other day, Mr. Nixon said cooly that he had contemplated using nuclear weapons during the Bangladesh war in 1971. Therefore, all talk of "regional initiatives to avert nuclear competition" is, to say the least, unrealistic. It is lacking in credibility.

Pakistan is on the verge of acquiring nuclear weapons. While the U.S. may make some admonitory gestures, it has no intention of exerting pressure on Pakistan to desist from developing nuclear weapons. Rather, the U.S. may use the threat of a nuclear Pakistan to persuade India to sign the NPT and to give up its nuclear option.

Therefore, India has a duty to devise measures to cope with the threat of a nuclear Pakistan not five or ten years hence but tomorrow.

/9317
CSO: 5150/0028

INDIA

# PAPERS REPORT NEW FINDS IN URANIUM, THORIUM

## Strikes in Meghalaya

New Delhi PATRIOT in English 3 Nov 85 p 5

[Text]

**Shillong, Nov 2 (UNI)**--The atomic mineral division (AMD) of the department of atomic energy has struck uranium and thorium at two places in the Garo Hills in Meghalaya.

AMD scientists located the minerals in Anek and Nenkhara areas, 23 and 65 km from the Tura town.

While the Anek is enriched with secondary uranium minerals including autunite and uranophane, the Nenkhara on the Eamra Nangwalbia-Bagmara road is endowed with both uranium and thorium, according to official documents available here.

The discovery of uranium in Anek and both uranium and thorium in Nenkhara had enhanced the possibilities of finding significant mineral sections in the Gneissic rocks in the area, the document said.

Petromineralogic analysis showed that the uranium content of all the rocks around Anek was relatively high.

The scientists also recorded distinct secondary uranium minerals of pale yellow colour along the Steehly Shear zone in Anek. The percentage of uranium values in the Shear zone ranged from 0.03 to 2.65. Radiometric scanning revealed that uranium values having negligible thorium were relatively high in the Nenkhara area. The minimum uranium content in various other rocks in the road section of the Nenkhara was 0.004 per cent.

Scientists felt that intensive search in the areas might lead to discoveries of both primary and secondary uranium concentration.

The AMD also found similar uranium minerals station in the phyllites and granites of the Shillong plateau, south of the capital town. It had suggested intensive investigation in the area which might offer the country a uranium rich zone.

## Andhra Pradesh Finds

Calcutta THE TELEGRAPH in English 5 Nov 85 p 1

[Text]

**Vishakhapatnam (UNI): Geologists of the Atomic Energy Department have found evidence of the presence of granatoid bodies bearing uranium and thorium in Mahbubnagar and adjoining districts.**

**Recent ariel and magnetic surveys covering 6,500 sq km indicated district zones of rocks bearing uranium and thorium, the geologists said.**

/9317
CSO: 5150/0030

# NEW 500-MW REACTOR PLANNED FOR TARAPUR

Bombay THE TIMES OF INDIA in English 16 Oct 85 p 1

[Article by L.K. Sharma]

[Text] NEW DELHI, October 15.

THE country's first 500-MW atomic power station will be located at Tarapur now known for the first imported enriched uranium fuelled reactors of smaller size.

The atomic energy department has decided to switch over to 500 MW reactors after the proposed 235 MW reactors at Kaiga in Karnataka. Design work for the bigger unit has given it confidence to go to the next size earlier than envisaged.

The first 500 MW unit at Tarapur may be commisioned by 1995 and a similar unit will be added there later. The new reactors will ensure that power avilability from Tarapur is not affected even when the existing two units are closed down at the end of the next decade.

More than a dozen power projects have been planned as part a 10-year profile envisaging a nuclear power generation capacity of 10,000 MW by the end of the century. The final picture is not yet clear about the projected requirement of about Rs. 4,300 crore for the plan period.

## SEARCH FOR SITES

The main concern of the department, which hopes to earn Rs. 1,400 crores as revenue from power during the seventh plan, is that funds are committed for bulk orders as it would cut down costs and ensure participation by the private industry.

This year, work has been started at Kaiga and at Rajasthan. Each project consists of two units of 235 MW, which are expected to be commissioned in 1994.

Investigations are on for sites for more nuclear power plants. States including Punjab and West Bengal have been pressing the Centre for the location of power plants.

The second unit of the Madras Atomic Power Plant was synchronised to the grid some three weeks ago and is working well. The three nuclear power stations — Tarapur, Rajasthan and Madras — have a total installed capacity of 1330 MW. Stations with two units of 235 MW each are under construction at Narora in U.P. and Kakrapar in Gujarat. The two Narora units are expected to be commissioned by the end of 1987 and 1988, followed by Kakrapur units by the end of 1990 and 1991.

## RAPP WEAKENS

According to official sources, the operational experience of the nuclear units has been quite satisfactory, barring in the case of the first unit of the Rajasthan Atomic Power Station.

It is understood that RAPP-I may have to be written off or run at low power levels for generating just steam for the heavy water plant. Power generation will be possible if the oridnary water leakage can be plugged.

/8309
CSO: 5150/21

INDIA

# KALPAKKAM BREEDER REACTORS TO BE WHOLLY INDIGENOUS

New Delhi PATRIOT in English 6 Nov 85 p 7

[Text]

**Madras, Nov 5 (PTI)**—ProgrammUFto 'wholly indigenise' the Rs 750 crore prototype fast breeder reactor (PFBR) have been initiated by the scientists of the reactor research centre (RRC) at Kalpakkam, 60 km from here.

The programmes are mainly directed at replacing the 22 per cent import content of special stainless steel now being used in the Rs 68 crore fast breeder test reactor (FBTR).

The research laboratories, primarily in the metallurgy section the RCC's materials development division are trying to optimise and indigenously develop the type 316 austenitic stainless steel used in breeder reactors. The active involvement of the Mishra Dhatu Nigam (superalloys project) of the defence ministry and the Indian steel industry with the RRC in this regard is expected, Dr Placid Rodriguez, head of the RRC's metallurgy programme, told PTI.

Dr Rodriguez said a total of 350 tonnes of stainless steel went into the FBTR and the proposed 500 mwe PFBR would require as much as 4000 tonnes of very high quality steel.

He said the metallurgy of stainless steel was an important part of FBTR technology as enormous amounts of steel was used in the thin walled tube containing the carbide fuel of the reactor, the hexagonal wrapper tubes containing the assembly of fuel pins, the grid plate on which the subassemblies rest, the main reactor vessel and its double envelope, the intermediate heat exchangers, the sodium pumps, the piping and the tanks in the primary and secondary sodium systems.

The indigenous steels have not only to conform to the special requirements of chemical composition, cleanliness, and other quality standards but also have to be qualified for fast breeder reactor use through tests in sodium environment and irradiation testing in FBTR.

Dr Rodriguez said 'type 316 austenitic steel' was chosen for the fast breeder reactors in the country as it was particularly suitable for applications at high temperatures. Besides it had excellent 'creep strength and creep dectility' and good corrosion resistance and better weldability.

The steel has to withstand temperatures ranging from 550 (59 700 degrees celsius) when used in the cladding tubes for the plutonium-rich carbide fuel. This tube forms the barrier between fissionable material and primary sodium coolant. A total of 10,000 tubes are purchased for a reactor.

In the labs, however, the steel used in the tubes are subjected to much higher temperatures in the range of 600 to 700 degrees celsius to test its heat resistence and strength before certified fit for use in the reactor, Dr Rodrigues said adding that the steel had to be of uncompromisingly good quality as it had to operate in this hostile heat in a reactor during its 25-year life span.

The RRC metallurgy lab, the foremost testing facility for steel in the country, also has facilities for testing the corrosion capability of steel before it is actually used in the reactor.

Dr Rodriguez said the FBTR now serves as an irradiation test facility also for the development of fuel, blanket and structural materials for future commercial reactors, as all the subassemblies after irradiation will pass through the radiometallury laboratory (RML) for tests at the post irradiation facility laboratory.

Dr Rodriguez said the post irradiation examination of the fuel pins and the assemblies will, in addition to giving information on the performance of the carbide fuel, generate data on the influence of the reactor environment of the microstructure, mechanical properties and other metallurgical characteristics of the steel.

/9317
CSO: 5150/0031

INDIA PROPOSES REGIONAL TRADE IN NUCLEAR POWER

Bombay THE TIMES OF INDIA in English 11 Nov 85 p 16

[Text]

UNITED NATIONS, Nov. 10 (PTI):

INDIA has proposed that developing countries extend regional co-operation to trading in nuclear power, in the manner European countries buy and sell excess electric power among themselves.

The proposal was made by the Indian delegate, Mr. G. G. Swell, MP, on Friday before the general assembly during a debate on the report of the International Atomic Energy Agency.

Mr. Swell reiterated India's policy that nuclear energy should always be used for peaceful purposes, noting that India had voluntarily placed some of its nuclear facilities under the scope of safeguards of the agency.

At the same time, he insisted that the safeguards should be universal and all nuclear facilities, including nuclear-weapon facilities, should be brought under the scope of the safeguards.

Mr. Swell explained India's principled objection to what he said was the "unequal and discriminatory" nuclear non-proliferation treaty. "We cannot accept the position that some countries are more responsible than others and morally superior to others."

"We cannot also accept the position where nuclear weapons states are invested with a certain status and legitimacy for the possession and stockpiling of nuclear weapons," he said.

The Indian delegate referred to the current moves to take nuclear rivalry between the U.S. and U.S.S.R. to outer space and expressed "total disappointment" with the lack of progress in disarmament.

"We hope something positive will emerge from the summit between President Reagan and Soviet leader Gorbachov this month," he said.

Mr. Swell said the International Atomic Energy Agency's regional co-operative agreement (RCA) would help in mutual trade in nuclear power in third world countries.

By the end of the century, India has programmed to produce 10,000 MW of electricity from its nuclear power, he said.

India, Mr. Swell said, had mastered the technique of building nuclear-power reactors, and in practical application the country was using isotopes for in medicine, industry and agriculture.

About the agency's technical assistance fund, Mr. Swell said India was prepared to make available fellowships for training of personnel from developing countries. "We will also contribute our share to the RCA activities."

/9317
CSO: 5150/0032

# NEW NUCLEAR RESEARCH CENTER PLANNED FOR INDORE

Bombay THE TIMES OF INDIA in English 13 Nov 85 p 7

[Text]

BOMBAY, November 12 (UNI).

A new centre for advanced technology for conducting research in the frontier areas of controlled thermal nuclear fusion, lasers, advanced accelerators and other related areas is being established at Indore in Madhya Pradesh.

While thermal and breeder reactors will be playing a major role in meeting the power demand of the country in the next century the demand for power will be growing exponentially. One field which carries hope for the future is fusion.

According to an official source the CAT's centre at Indore is the natural outgrowth of scientific experience and manpower resources generated at the Bhabha Atomic Research Centre here.

At Trombay BARC has one of the largest complex of laboratories in the world having a staff of nearly 13,000, including 3,500 scientists and engineers.

However, some of the support facilities are already approaching saturation point. It, therefore, became desirable to set up an additional campus for developing new specialised technologies. This would also enable BARC to plan for other futuristic programmes in the next century.

## MAJOR THRUSTS

The major thrusts at the Indore centre will be in the areas of lasers, accelerators and fusion-related research and technology. Besides complementing the activities of BARC, these technologies will also be useful to the space programme.

The plan for the establishment of the Indore centre initiated by the department of atomic energy (DAE) in June, 1983, is in two phases. The first phase will relate to the development of the physical facilities for infrastructure.

Phase II, encompassing the entire seventh plan, will develop a variety of technologies in the fields of accelerators, lasers and plasma systems and a variety of lasers which will be ready for production by carefully identified and monitored industries.

BARC is embarking on the establishment of the Indore centre with the benefit of the experience at Trombay, RRC, Kalpakkam and the variable energy cyclotron centre, Calcutta.

The centre will be developed in total harmony with the lake and wooded areas around the Sukh Nivas Palace, eight km. southwest of Indore. The various facilities will be located taking maximum advantage of these features and, at the same time, ensuring easy access from the housing colony and the city.

Discussions are already in progress with the respective Madhya Pradesh government agencies for installation of power lines and a water supply system as well as the sinking of some borewells.

## MAJOR EFFORTS

The successful commissioning of the variable energy cyclotron at Calcutta and the tandem accelerator at Trombay have provided experience and confidence for launching these further major efforts.

The major facilities at the Indore centre, like the accelerators, will be utilised as a national facility and will be available for use by research workers from universities and other institutions.

This is in keeping with the pattern of other large DAE installations like the cyclotron centre in Calcutta. Interaction with the universities has always been an important aspect of the DAE's activities and at the Indore centre also it will be given great importance in all phases of its development and ultimate utilisation.

/9317
CSO: 5150/0033

## BRIEFS

JANATA NUCLEAR STAND--New Delhi, Oct 30--Mr Krishan Kant, a member of the national executive of the Janata Party, yesterday said that Mr George Fernandes's remarks on the nuclear issue which appeared in the Press, did not represent the authoritative party position. In a statement, he said in spite of the opposition of Mr Morarji Desai, the Janata Party national executive at Bangalore in June 1981, had stated in a resolution that India would have to go nuclear if Pakistan did so. Mr Kant said Mr Fernandes seemed to be a conscientious objector to nuclear violence. "The advice of Mr Reagan to Mr Rajiv Gandhi about Pakistani nuclear weapon should have opened the eyes of all patriotic conscientious objectors. Pakistan is going ahead with its atom bomb project with the tacit approval and support of the USA to suit its foreign policy objectives. There can be no more dilly-dallying and weak-hearted moral objections to India going nuclear." [Text] [Calcutta THE STATESMAN in English 31 Oct 85 p 10] /9317

RAJIV ON OPTION--New Delhi, Nov 1--Mr Rajiv Gandhi today made it abundantly clear that India had not closed its option on the question of producing a nuclear bomb, report PTI and UNI. "The option is open and I am not closing it," he told a luncheon meeting with the Indian Association of Foreign Affairs Correspondents. At the same time, Mr Gandhi said, India had no nuclear weapons programme and "our intention is clearly not to make a weapon." The Prime Minister categorically denied reports that India might carry out a pre-emptive strike on Pakistani nuclear installations. He said "we are not thinking in this direction," and added amidst laughter that they (Pakistan) might have other friends who could do this job. Mr Gandhi ruled out joint inspection of the nuclear facilities of the two countries, saying that it would not be effective since Pakistan would try to shift its nuclear material which it was making clandestinely, to another place. [Text] [Calcutta THE STATESMAN in English 2 Nov 85 p 1] /9317

BJP ON BOMB--New Delhi, October 30--The BJP has urged the government to adopt an "independent and positive policy" with regard to the atomb bomb. The party adopted a formal resolution at Bhopal in July last favouring manufacture of the atomb bomb by India. According to the party "as against nuclear China and nuclear Pakistan and as against a U.S.-China-Pakistan collusion on a nuclear strategy, nuclear India will acquire a convincing credibility to ensure peace on the sub-continent and an invincible capability to defend its territory. This step will also strengthen India to play a more effective role on behalf of the third world in preventing the race of nuclear weapons and the dangers of star wars." Mr Krishan Lal Sharma, the BJP secretary in whose name the statement was issued, demanded that "the nation be taken into confidence by the Prime Minister about his assessment of the international situation on the basis of his experiences during the recent foreign tour and clarify India's policy to combat the threat of Pakistan's nuclear bomb." [Text] [Bombay THE TIMES OF INDIA in English 31 Oct 85 p 1] /9317

CSO: 5150/0025

ISRAEL

MATI PELED WRITES ON NEED FOR NEW NUCLEAR POLICY

Tel Aviv HA'ARETZ in Hebrew 9 Sep 85 p 7

[Article by Mati Peled: "Israel in the Nuclear Armament Race"]

[Text] On 28 August of this year, the overt signal was given for the beginning of the nuclear armament race in the Middle East. On that day it was announced that the governments of Syria, Libya, and Iran had decided to acquire nuclear weapons, in order to prepare themselves for a confrontation with Israel. For the first time, senior representatives of Middle Eastern countries--including foreign ministers--are addressing officially the nuclear armament race and declaring their intentions publicly. This political step was taken immediately after the publication of the report of the Institute for Disarmament Research in Washington, in which it was stated that Israel has nuclear capability which can be mobilized on short notice and that the Kfir planes and Jericho missiles in Israel's possession can carry nuclear warheads. Their number is estimated at between 15 and 20.

To this point, Israeli governments have been accustomed to defining their stances in this area in vague terms, stating that Israel would not be the first to introduce nuclear weapons to the area. But, the contention that Israel is in fact developing nuclear capability was never denied. The report of the Institute for Disarmament Research turned the assumption that prevailed until now in the world regarding Israel's nuclear capability into an accepted fact. From this point on, Israel is considered to be a country with nuclear armament, able to employ them in times of war through identified and recognized systems of warfare.

Israel's policy in this area was from the outset adventuristic. With the erection of its nuclear reactors, Israel refused to become a party to the international convention to prevent the dispersement of nuclear weapons. In so doing, it prevented itself from the possibility of acquiring, at relatively favorable terms, American-built reactors, and made itself suspect even in the eyes of its friends. Down through the years, different studies have been published regarding Israel's nuclear strength, which determined, almost with certainty, that the Israeli Army has nuclear weapons. The matter became an accepted fact, agreed to without quarrel by everyone, even in the absence of any possibility of proving it. And now all doubt has been removed in the matter, the most overt expression coming in the decision of the three foreign ministers published in Damascus.

It is possible to estimate in various ways the abilities of Syria, Libya and Iran to nuclearize their armies, but there should be no doubt as to their financial ability to realize this should they just want to. Now that the nuclear race has begun overtly, the question which presently presses on our area is within how much time they will fulfill their nuclear plans.

Lacking Sustaining Power

The conclusion for Israel to draw from this new fact is the vital need to consider anew the question of the nuclear race in the Middle East and its ability to stand up to a nuclear confrontation. This consideration must take into account several basic facts. First, that Israel does not have the ability to sustain a nuclear attack. One bomb on the order of 20 kilotons dropped on Tel Aviv would be enough to put an end to the ability of the state and Israeli society to function for a long period. Second, there is no possibility for Israel to build a passive defensive system against such a bombing, because a network of shelters against nuclear attack requires huge outlays--far surpassing Israel's means. Third, there is no possibility of setting up an active defense network against nuclear attack, because the ranges that a ballistic missile with a nuclear warhead would be required to travel are very short.

There is no possibility of setting up a warning system which would make possible timely entry into non-existent shelters or a system of anti-missile missiles for the purpose of intercepting approaching missiles. The development of such a system implies an impossible burden, even for the superpowers, which is the reason each of them has reached agreement that they would establish only the most limited system of anti-missile missiles, and this mainly for the purpose of studying the subject and developing allied technologies.

The absence of the possibility of establishing an active or passive defense system against nuclear warhead-bearing missiles was accepted in Western European countries at an early stage of the nuclear armament race. Embedded in this view is the unsubstantiated assumption that Western Europe has a limited ability to sustain nuclear attack--something which is by no means correct regarding Israel.

Preemptive Attack

From the facts the elaborated to this point emerges the conclusion that in the reality of nuclear armament in the region, the only thing which can protect Israel from a Syrian, Libyan or Iranian attack is the ability of Israel to launch a preemptive attack with nuclear warheads before its military sector is destroyed. But, as we have learned from the history of the nuclear race between the superpowers, this is a most dangerous situation which requires each side to try to be the first nuclear striker, for it is difficult to estimate ahead of time the extent of the damage likely to be caused the one hit first. In order to reduce the likelihood of a premeditated attack, the two superpowers have invested enormous sums of money to establish sophisticated warning systems and passive defense systems--two systems not at Israel's disposal.

In fact Israel already demonstrated a readiness to launch a preemptive strike when it attacked the Iraqi nuclear reactor, but in so doing it established a dangerous precedent which is likely to prove its stumbling block in the future. For, from this time on, whenever other countries in the area decide to erect an offensive nuclear system, they will take into account Israel's readiness to launch an attack and will take all the precautions to prevent or preempt it. After offensive nuclear capability is acquired, the area will be enveloped in a terrible tension: every side will want to ensure that it will be the first to open the attack, since its ability to respond after absorbing such an attack will always be an unknown. Such will also be the case for the other countries in the area, despite the fact that their larger land masses give them a much greater sustaining power than Israel.

If such a dangerous situation comes into being, the Middle East will turn into an area in which, on any given day, a nuclear holocaust can occur. And there is no doubt that such a holocaust will be more difficult for Israel than for any other country in the area. This notwithstanding, we hear that in the upper echelons of the Ministry of Defense they are discussing "nuclearizing" Israel's conception of security, as if such will bring a solution to all of Israel's problems (see Avraham Schweitzer's article in HA'ARETZ 26 July, No 280. The fact that such discussions are going on was not censored beforehand and was not denied after publication. Yet, the minister of defense refuses to shed any light on the debate taking place in the inner sanctum of his ministry. His conduct strengthens the assumption that Israel is indeed at the beginning of a process intended to nuclearize the Israeli army, and this fact hastens the nuclearization of the entire area.

The time has come--and we might only have a little bit of time left--to define anew the policy of Israel in this realm. If it is Israel's wish to prevent a nuclear holocaust in the foreseeable future (in the range of 15-30 years), Israel must adopt a policy based on the following principles: first, to become a party to the convention against the proliferation of nuclear weapons and to initiate an area monitoring system; second, to propose the convening of an international conference which will discuss military nuclearization in the area and means of ensuring nuclear demilitarization; third, to recommend the establishment of a permanent commission which will debate the problems of nuclear energy in the area and will coordinate steps for the safe development of this energy for peaceful purposes. This commission will ensure against excessive pollution of the area with nuclear waste and make possible the establishment of a regional network of nuclear energy sources for the benefit of all the countries of the Middle East.

In the past, steps were taken to coordinate the exploitation of water sources by Israel, Jordan, and Syria--even in the absence of peace. Today, the sphere has to be expanded and an effort made to deal with the question of the nuclearization of the area--this too, without peace and for the sake of peace. It is within reach.

12884/9435
CSO: 4423/38

PAKISTAN

# COMMENTARY VIEWS DISPUTE WITH CANADA ON NUCLEAR FUEL

GF241715 Karachi DAWN in English 23 Dec 85 p 5

[Editorial: "Pakistan-Canada Cooperation"]

[Text]

The current visit of the Canadian secretary of state for external affairs, Mr Joseph Clark, and a group of top officials and prominent industrialists to this country has provided an occasion for a fresh consideration of the possibilities of promoting the growth of bilateral relations. The cooperative relationship has remained unchanged in spite of the differences that have existed since 1976 over the safeguards demanded by Canada for continuing its supply of nuclear fuel for KANUPP [Karachi Nuclear Power Plant]. Despite strong feelings then aroused in Pakistan about the way Canada abruptly terminated its assistance in the running of the Karachi Nuclear Power plant, the two countries have continued to cooperate broadly in such areas as external relations, international trade and economic development. As Prime Minister Mohammad Khan Junejo acknowledged at a meeting with the distinguished guests, Canada has played a pioneering role in the economic development of this country. The first dam in Pakistan (Warsak), the first cement plant (Maple leaf), and the first nuclear reactor (KANUPP) were built by Canada. During the current visit of the Canadian minister, eight loan agreements (amounting to 155 million canadian dollars) have been signed to provide assistance in such projects as the installation of turbines for Tarbela Dam and on the anti-waterlogging and salinity control plan (Left Bank Drain Project). Mr Clark has extended an assurance that "Canada will maintain an active presence in Pakistan in the field of economic cooperation and development". Canada's 18 million-dollar annual aid for Afghan refugees will continue. There have also been discussions about participation in the building of a dam at Basha, which was orginally planned to be sited at Kalabagh. There are also indications of a growing interest in joint ventures and in an increase in Canadian private investment in Pakistan. All this provides a firm basis for the deepening of friendly relations between the two countries.

One remark made by Mr Clark at his press conference in Islamabad on Saturday will be widely noted. He said that Pakistan was an "innocent victim of the high standards" set by his country in the field of nuclear cooperation. There is, of course, no need to take up this matter as a bone of contention. But there is need for setting the record straight. Canadian-Pakistan nuclear cooperation came to a halt not because there was any serious difficulty about safeguards at KANUPP — old or new. Pakistan's position on this score has been above board all along. Besides the Canadian Curbs, all safeguards laid down by the International Atomic Energy Agency (IAEA) have been faithfully observed. Besides the Canadians, IAEA inspectors and even the US scientists have had free access to the plant. But when a country insists on extending the safeguards laid down by it to similar other facilities in Pakistan, the move comes into conflict with the principles of sovereignty and equality in international relations. Of course, the IAEA safeguards do extend to those other facilities. But to concede the right of inspection to another country with regard to facilities unaided or unsupplied by it makes it a different matter altogether. Maybe, Canada applies the same approach and "standards" to other countries as well — India for instance. But the fact is that India is no longer in need of much Canadian cooperation or help in this field. It is now the first Third World Country, and the seventh in the world, to have the capability to build and run a fast-breeder reactor with domestic technology and fuel. On the other hand, Pakistan is still a long way off from that stage of development. So the seeming "even-handedness" of certain Western countries in such matters is in real effect quite discriminatory to a country like Pakistan. It is to be hoped that our Western friends would, sooner or later, agree to take a second look at policies which impose unjust restrictions on the acquisition of nuclear technology by Third World countries which are deficient in fossil fuels.

CSO: 5100/4731

PAKISTAN

## ZIAUL HAQ TALKS ABOUT U.S. PRESSURE

PM301441 London AL-MAJALLAH in Arabic 27 Nov-3 Dec 85 p 18

[Interview with Pakistani President Ziaul Haq by Wahib Muhammad Ghurab in Muscat "during recent celebration of Oman national day"]

[Excerpts] Question: Has the United States put any pressure on Pakistan because of its nuclear program?

Answer: Yes, the United States has often applied pressure on this regard and requested inspection of the Pakistani nuclear reactor despite our assurances that the nuclear program is for peaceful purposes. The United States knows well that Pakistan is surrounded by such countries as India, China, and the Soviet Union, which all possess nuclear bombs. Yet, when the matter concerns Pakistan it is a different story. But we are continuing with our program despite all this opposition not only from the United States, but also from the Soviet Union and India, the countries that do not wish us to make any progress in this field.

Question: There are Israeli threats to Pakistan because of its nuclear ambitions. Are you taking these threats seriously?

Answer: It is possible for Israel to launch a raid on Pakistan. There are several countries, such as the United States, Russia, and India, that are not pleased with Pakistan's nuclear program. I believe that Israel will not launch a raid on Pakistan unless it finds assistance from others on the way. I hope that it will not find such assistance.

Israel is afraid that Pakistan will offer its nuclear expertise to the Arab countries and therefore it is possible that it will plan to strike at Pakistan.

/9365
CSO: 5100/4725

PAKISTAN

## LEADING INDIAN ACADEMICIAN INTERVIEWED

Islamabad THE MUSLIM in English 29 Nov 85 p 1

[Article by Mushahid Hussain]

[Text]

*This interview with K. Subrahmanyam, Director, Institute for Defence Studies and Analyse (IDSA) in New Delhi took place during the recent Seminar in Kathmandu on "Regional Security in South Asia." A member of the Prime Minister's National Security Board, K. Subrahmanyam, is generally considered to be a "hawk" in the Indian National Security establishment. He is also presumed to be the de facto head of India's "Bomb Lobby".*

**Q** *You have been on record as having said that Pakistan has a right to develop nuclear weapons capability. Do you still stick to this position?*

ANS: Yes I still stick to the position that so long as nuclear weapons exist in the world and are considered as legitimate weapons of war by some nations of the world, then other nations of the world have an equal right. Of course, I want to delegitimise all nuclear weapons by everybody so long as the five nuclear weapon nations plus two clandestine weapon nations, Israel and South Africa and the rest of the NATO countries whom I call christonuclear nations have weapons on their soil. So long as these weapons exist and they are being considered as legitimate weapons of war by some of the most powerful countries of the world, then every other country has got the right including Pakistan.

*Q: It was in May, 1985, that your Prime Minister gave an interview to, I think the Los Angeles Times where in he said that even if Pakistan develops a nuclear weapons capability, India will not go for a bomb; will not review our thing. But now I see a change in that policy because it is now being said that if Pakistan makes a bomb or has the capability to develop nuclear capacity, India will go for it. This is one part. Why this change? And secondly there seems to be concern in Pakistan that India has raised the political temperature through statements and interviews given by the Prime Minister consistently attacking the nuclear programme of Pakistan and making it a big international issue. Why is this so?*

ANS: I do not think there is any change or anything is sought. It is very difficult to go by newspaper reports of one day or the newspaper reports of the other day. But it is true that at present this particular topic features very much in our newspaper headlines and there are so much of accusations and counter-accusations etc. But then one must understand the reasoning underlying this kind of development. Alright, what is happening in India is that we want to communicate to the U.S. congress (laughing) that it is not the question of just Pakistan offering this or India refusing it, but that for various reasons India is not in a position to accept it because these offers do not have credibility. It may be defined as a kind of excuse that will be able to convince US congress. That is what is the real point ( again laughing ), and therefore, on both sides there is so much of increase in rhetoric.

*Q: There is nothing more to it? Because, as we discussed it yesterday also in Pakistan there is lot of concern and in fact an apprehension that perhaps there is something more to it than a war of words: that India has certain designs against our nuclear complex at Kahuta. Do you totally rule out the possibility of any Indian attack, military attack on Kahuta?*

ANS: I cannot visualise the possibility of a rational military action against Kahuta. The reason for that is this: If India bombs Kahuta, Pakistan can retaliate against Indian nuclear installations. Kahuta has got only Uranium in it and, therefore, if Uranium facility is hit at and Uranium gets scattered about, the amount of damage to environment is not so much. If on the other hand, Pakistan retaliates against Indian nuclear installations, which have got plutonium in them, and that plutonium gets scattered it will have tremendous adverse consequences. People will not be able to live in that area. Therefore I think that any attack on Kahuta will be a totally irrational act. Both India and Pakistan have taken public stand on this issue when the Israeli attack on Iraq was being considered in the UN and in the IAEA. And also at the Radiological Warfare Convention , which is being considered in the UN, their stand is that nuclear installations should not be attacked. And, therefore, I do not see any rationality behind that .

*Q: What Indian nuclear installations, in your opinion, are*

*within reach of Pakistan's possible retaliatory attack.*
ANS: Rana Partap Singh; and possibly Tom and Tarapur.

*Q: And how about your view about the Israelis. There was also talk of an Israeli - Indian collaboration and perhaps at one stage there was concern in Pakistan that the Israelis have come into Sri Lanka ostensibly to help in the counter-insurgency. This ultimately, may have some linkage between Israel's plan against our nuclear installations.*

ANS. That, of course, is something which is of special concern and should cause concern to Pakistani rulers. The only thing, I can think about is the possibility of Israel and the US carrying out something like that. The Israelis can re-fuel twice in the air and reach upto Islamabad and secondly the Americans can give them the necessary electronic warfare aircraft which can surprise your defence and therefore, what we have to really worry about is Israel and America . And I would also add that when Mr. Bhutto put the Kahuta installation in the place where it is, it is quite obvious he was more worried about Israel and the United States and less (laughingly) about India.

*Q: Would you say that the Sikh issue–the Punjab issue is behind us, in the context of bilateral India Pakistan relations, and is it still an irritant?*

ANS: I wish I could say that; on the other hand I am of the view that we are going to have a certain amount of terroristic activities but you cannot rule out fear in India that the terrorists are able to take refuge in Pakistan territory and will be able to receive some kind of covert support from Pakistan. This could cause problems and that is one of the reasons why I would suggest, and I had suggested that one of the first confidence-building measures between India and Pakistan should be against terrorism and hijacking.

*Q: You refer to certain allegations and accusations made in the Indian media regarding alleged Pakistani involvement in your troubles in Punjab. But if we link it with certain situations in Sri Lanka, where, it is almost confirmed now, that India is training saboteurs and anti-regime guerillas, how do you reconcile the two positions: that on one hand India is accusing Pakistan of fomenting agitation in Punjab and on the other, India is actively sponsoring agitation against Sri Lanka?*

ANS: Firstly, I don't think it is quite correct and secondly I do not think the two situations fall into the same kind of category . The first thing in regard to Sri Lanka is that there are 15 million Tamilians in Tamilnadu. And two million in Sri Lanka and they are connected by blood ties. If one brother lives on one side of the state the other lives on the other. . And then they inter-marry and, therefore, lots of people come and go. Also the southern district of Tamilnadu provides a large number of ex-servicemen and, therefore, if the Tamilian separatists claim for themselves through their ex-servicemen and others in Tamilnadu it is something perhaps very difficult and also politically somewhat difficult for the Government of India to encourage violence and once violence is in Sri Lanka, India is using its good offices in order to bring about a settlement and the Indian government has stated its total commitment to the unity and integrity of Sri Lanka. Now the position in case of Pakistan is very different. You don't have a Sikh population in your country and thus the two situations are totally different.

## MEASURES

*Q: You just mentioned regarding some confidence-building measures in the context of Pak-India relations. Would you elaborate as to what sort of confidence-building measures you have in mind ?*

ANS: Yes I have been advocating this. I think that our governments can easily constitute confidence-building measures and are very much within the capability to reach agreement without much elaborate discussion. First, of course, is the anti-hijacking arrangement and secondly I would say that since there is considerable concern in Pakistan about India attacking its nuclear capability, let us have an agreement confirming that both countries will not attack each other's nuclear facilities and this is our common stand, about the possibility of chemical weapons being used in war, so let us have another agreement in which we confirm the commitment that both the countries have made under the Geneva protocol of 1926. The Siachin line of control should be agreed upon. Then of course these should be discussed and the line of control should now be demarcated. We are leaving it undemarcated. Then I would say that there should be increase in trade and in fact trade today is in surplus for Pakistan. It is a good time to start discussing the increase in trade and we don't mind Pakistan having a surplus in trade like we have with Malaysia. Malaysia has a trade balance, which is half a billion dollar surplus in favour of Malaysia. Then of course, there is the question of abolishing irritants like the Pakistani visitors reporting to the Indian police and Indians signing to report to the police in each country. Then there should be an increase in material like books, magazines and newspapers.

These are steps which are essential in order to build confidence. As it happened in Europe the policy of detente resulted in significant expansion of trade and human contact.

## SIACHIN GLACIER

*Q: How serious, in your view, is the Siachin Glacier issue because there have been some military skirmishes intermittently last year and loss of human life and casualties on both sides. How serious is it politically and militarily?*

ANS: I don't think it is serious at all . I have gone into the documents of the 1949 agreement as well as the 1972 Simla agreement there it is quite clear that the line of control runs along the western side of the glacier. The problem was that since it was not actively patrolled by India and Pakistan some states started sending mountaineering teams into the area, between it and the Karakurram Pass and that is how the crisis has occurred. The point now is only to go again to the 1949 and 1972 documents. They say clearly that is the end of the matter.

*Q: You mentioned in your paper, in South Asia that there are three nuclear-weapon-powers: China, Soviet Union and US which is in the ocean-and you also mentioned certain countries which have shown they can resist occupation; you mentioned three countries in your paper: Vietnam, Lebanon and Afghanistan. How do you see the Afghanistan question particularly in the context of its being in the security aspect or do you see it has been a threat to the entire South Asian region?*
ANS: You see, the point is, as I mentioned in my paper, the British Empire looked at the security of India in terms of buffers. That is

how the British Imperial defence policy of India was conceived. Now we have lost all buffers. In the ocean the Americans are present and today one American ship has more power than all the South Asian nations put together, and the Chinese are in Tibet and sitting firmly on Tibet and then the Soviet Union is in Afghanistan. Now the point in our respect is, that we are thinking in terms of security. We can't think that in 19th century terms. We have got to think about it in an alternative way. The only thing that we can do is to ensure the Soviet Union withdrawal from Afghanistan and we have always favoured political negotiations for the withdrawal and in the case of Tibet we have accepted not only Chinese nominal suzerainty but actual sovereignty on Tibet and we thought at least that will ensure peace on that border but unfortunately it didn't. We do hope to sort out that issue with China. And so far as the Indian ocean is concerned, of course, all the littoral nations have moved resolutions about its being a zone of peace and about the extra forces to be withdrawn from it. So we have got to live with this situation. Another point nowadays is that the inter-action of all the three major powers of the sub-continent provides certain amount of security danger for the sub-continent and it is not merely the Soviet Union. It is one of the dangers but not the only one.

## ON NO WAR PACT

*Q: During his recent speech in the National Defence College, Delhi, Mr. Rajiv Gandhi almost ruled out the possibility of any serious discussion on Pakistan's proposal of a 'No-war' pact because he referred to the overall improvement of climate and so forth: so where does this lead us in terms of formal discussions and negotiations. Where do India-Pakistan relations go from here?*

ANS: You see, there is a philosophical difference in our approach. As I have said in my paper, "The "No War Pact" is a kind of arms control approach. Recently, even in the West, President Reagan has mentioned in respect of the summit saying that arms is only one aspect; what should be done is improvement in the political relations. What Prime Minister Rajiv Gandhi mentioned is the fact that India has always offered a political approach to these things and it is in that context that he feels a "No War Pact" is not a thing on which one can lay so much emphasis.

*Q: Speaking about Reagan, do you have any expectations from this Reagan-Gorbachev Summit in Geneva : will it have any positive effects on regional issues, such as Afghanistan?*

ANS: It is very difficult to say because in the last one or two days since we have come here we are not keeping in touch with the latest developments. I think some positive signs like Reagan accepting about 50% cut offer by the Soviet Union is something on which you would base further negotiations. This is the first time that some kind of agreed basis to build something on is visible and I suppose one is entitled to be somewhat optimistic.

*Q: There is a lot of speculation in the last few months about the American attitude towards your Prime Minister. It is changing, with the Americans very much excited about Rajiv Gandhi, and they are very keen to woo him. There are reports of a transfer of technology which has military purposes and so forth. Where do you see the Indo-American relations heading to ? Are there possibilities of this relationship maturing into a more solid and stable one or do you see road blocks ?*

ANS: One has to go into the background . When looking at American-Indian relations in their wider perspective one has to analyse as to what is happening in the globe as a whole. Now from what I can gather from the Americans is this: They feel that Sino-Soviet contacts are moving -progressing and there is no progress than what the other side had claimed to have made. Then there is going to be a significant attenuation in the hostility between China and the Soviet Union. That is going to be one major factor for the world. And the second thing they are feeling now is that China is not going to be a card used by the US vis-a-vis Soviet Union and China is going to be independent and assertive and at the same time China is going to expand its links with the Soviet Union as well as Japan and the others and China is also going to be disappointed. They also feel that the transfer of technology to China is not going to fully satisfy China because China's capacity to absorb technology is not very much and thus they certainly have apprehensions about China. The second point is that the Americans think there is going to be a trade struggle between Japan and themselves and that is also going to complicate the situation in their vision. And thirdly there are perhaps some reservations about Pakistan. Therefore, given all these things they think that the Indian Prime Minister is exploiting technology etc. etc. And they also think that given the history of Indian foreign policy, India also responds to these things and as Kissinger always says that the Indians look after national interests and so they think that some of these changes will produce some corresponding changes in Indian policy.

## RAJIV'S USSR VISIT

*Q: How about relationship with the Soviet Union? What was the purpose of Rajiv Gandhi's recent visit to Moscow and after that his visit to New York. Now do you see that relationship progressing?*

ANS: That relations has elements of stability and I don't think that it is going to change and I have a feeling that Gorbachev wanted to see Rajiv Gandhi at this stage. The reasons for that are just as Reagan and other western leaders had got together. Reagan had to make them endorse his approach to the Geneva talks. First Gorbachev met all the pact leaders in Sofia and got their endorsement and thereafter he wanted some other endorsements and then after his visit to Moscow Rajiv Gandhi himself said that the Soviet proposal is a very significant one, offering fifty per cent cut and so I would say that perhaps from the Soviet point of view it is one of the things they are doing in their world wide campaign, for their approach to disarmament and arms control.

*Q: The Iraq-Iran war has been going on for a long time and we don't see any end to it. What do you think would be its implications on South Asia and how does India view it ? And secondly some observers feel that there is, shall we say, an element of Islamic factor and it is that Islamic factor which is viewed with concern in India.*

ANS: The Iran-Iraq war is going on mainly because the countries around Iraq and Iran including Pakistan and Afghanistan and others have no interest in stopping the war. Then, Iraq is making sure that it is going to take a long time to take itself out from this and that is also in the interest of some of the Arab countries. And similarly they are bleeding Iran, making sure that it is going to take a long time to recover from that. It is also considered to be in the interest of other countries, so they continue to make sure that enough weapons are in the hands of the two sides to kill people without,

of course, its resulting in any major decision. The result is that it(war) is going on. It is not India where there is a fear of Islamic fervour or revolutionary Islam. It is in the Gulf area that the fear is. That is the reason why Iran is being bled. Now the whole idea is that the longer the war takes place, the lesser revolutionary Iran will progress. Therefore, they fear the revolutionary Islam of Iran. And on the other hand, my own personal view is that whenever such religious revival takes place it results always in violence. Therefore, if there is any rise in fervour about revolutionary Islam it is going to wake the Islamic world and there is bound to be a lot of violence within itself. You see it in Lebanon; you see it in the Middle East and various other places and it has broken the PLO. Therefore, if there is any rise in Islamic fervour, the dangers are mostly to the Islamic countries.

## ON NUCLEAR ISSUE

***Q: You have been quite candid in determining your approach towards the West which is normally very patronising towards Third World countries particularly on the nuclear issue. What do you think is the West's basic approach to the Third World countries on the nuclear issue? Is it characterised, just by a sort of hypocricy, diplomacy or cultural arrogance?***

ANS: I think it is both. First, of course, is that the entire industrialised world barring non-aligned and neutral countries among them have more or less accepted the nuclear war doctrine as the basis for their security NATO, and therefore, the industrialised world considers the nuclear doctrine as its monopoly, It does not want others to get crashing into that. Secondly their view is that they have been able to manage the world satisfactorily and the black and brown men have not been able to manage the world and if, therefore, they get hold of the weapons they won't be used. On the other hand, when we look at things objectively this doctrine of busting cities and indulging in genocide and bombing is part of the entrenched military tradition of the West. Since the Westerners believe in genocidal bombing, they think everybody else will do what they do and therefore, they do not want other people to have weapons. And lastly of course, we have recently published an article on nuclear terrorism — the Westerners all the time say it is Col . Qaddafi or somebody else who would detonate the bomb. The point is that chances of nuclear terrorism happening are comparatively high within the industrialised world. This would be the sort of sweep under carpet.

## ON THE BOMB

***Q: You are considered generally by reputation a hawk or a hardliner on Pakistan and what is this reputation based on? Is it correct? At least many observers in Pakistan perceive you as the de-facto head of the bomb-lobby in Delhi. Would that be a fair assessment?***

ANS: You see, I am against the bomb. The main point is that I consider this division between hawks and doves is totally inadequate. Of course recently somebody from Harvard said it should be hawks dowsing owls. There is not much distinction between hawks and doves and, therefore, that is the reason why one would say that I am against nuclear weapons: I am for abolishing nuclear weapons but I am only refusing to accept this dominance of nuclear-weapon-powers and my advocacy for India to go nuclear or for that matter a few more countries in the world to go nuclear is based on rational argument. That is necessary in order to bring about nuclear disarmament. But then people do not go into all this and then everybody says we have a bomb.

## ON INDO-PAK

***Q: These last couple of questions: You seen to have quite an improvement in your relationship with China. Do you think that perception in India about China being a threat to India has changed and that China is no more an adversary to India; so that there has been qualitative change in Indian-Chinese relationship?***

ANS: Yes there is change in Indian-Chinese relationship. It is not because of any thing that happened in India. It is because China got rid of Maoism a bit. So the fact remains that the kind of attitude which China adopted towards India was part of Mao's excesses. And if you look at it today, Deng Xiao Ping's policies, economic policies and development strategy are almost the like of what Mao had like accepting economic aid from various countries of the world; accepting bank loans and all kinds of loans; foreign technicians; and a certain amount of liberalisation within the country, taking all kinds of things. Now if you go back, the struggle between Mao and Den Zheo Ping, was on the development factor. Therefore, when Mao wrote about Nehru's philosophy and questions in 1960-62, one wonders whether he was doing all this against Nehru or it was a part of internal power struggle in China. Now today's China is different from Maoist China.The present government of China is not likely to behave like Mao's China. Then the Chinese have themselves done something concrete like stopping arms supply to Naga and things of that sort. The point, is that there are no permanent friends and no permanent enemies. The points of view change when circumstances change.

***Q: Are you pessimistic or optimistic regarding Pakistan-India relations?***

ANS: I am optimistic.

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PAKISTAN

## LEADER URGES 'FULL USE OF NUCLEAR CAPABILITIES'

Islamabad THE MUSLIM in English 2 Dec 85 p 10

[Text]

PESHAWAR, Dec 1: The chief of the defunct Jamaat-i-Islami, Mian Tufail Mohammad, has asked the Government to abandon its apologetic stance on making of atom bomb and demanded that Pakistan should make full use of its capabilities in the nuclear field for, he thought, it was the need of the moment.

Talking to newsmen here on Sunday, the Jamaat chief told a questioner that Pakistan's next-door neighbour, India, had already gone nuclear and was now preparing for a hydrogen bomb explosion while the technology and atomic firepower was already at the disposal of countries like Israel, Brazil and South Africa, besides France and Britain and the Superpowers.

Therefore, there was no valid reason that Pakistan or for that matter other Muslim countries like Saudi Arabia, Libya, Egypt, Syria, Iraq should be stopped from making the device because they were Muslims.

"No one has the right to plug out way to developing our nuclear know-how," he insisted.

Mian Tufail did not agree with the contention that Pakistan's economy did not permit developing nuclear weapons.

Referring to India, the JI chief said Pakistan wanted to be at peace with that country and also with Russia but while the former had been consistently committing aggression thereby usurping Kashmir, Junagadh and East Pakistan and now working to weaken the security of Pakistan, the latter was harping similar tunes on the country's north-western borders.

Replying to a question, he reiterated Pakistan would like to remain at peace with everyone, particularly the immediate neighbours provided they also responded in the same coin.

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PAKISTAN

## KANUPP REPORTEDLY DEVELOPS COMPONENTS CAPABILITY

Islamabad THE MUSLIM in English 3 Dec 85 p 8

[Text]

KARACHI, Dec 2: Karachi Nuclear Power Plant (KANUPP) has developed design and manufacturing capability for fabrication of some mechanical components of both nuclear and conventional systems of the plant.

According to PAEC sources, locally manufactured spares installed on pumps, valves, primary heat transport system, fuel handling system, process water and salt water systems, have performed well.

They said that the design and manufacturing techniques introduced at KANUPP conform to international standards.

KANUPP is currently operating 80-MW power and supplying it to the KESC grid system. Its total capacity is 125-MW.

The PAEC has also developed a pilot facility for the production of nuclear instruments at Pinstech, near Islamabad.

Beginning with the fabrications of standard radiation monitoring and basic nuclear modular counting instruments, the facility would eventually help PAEC acquire self-sufficiency in nuclear instruments.

The instruments to be fabricated have been grouped into radiation monitoring and safety instruments, modular nuclear research instruments, and nuclear medicine instruments.

It is also planned to produce unassembled kits of nuclear instruments which could be readily assembled at short notice.

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PAKISTAN

NUCLEAR ENERGY: U.S. GROUPS SAID WILLING TO PLEAD CASE

Karachi DAWN in English 9 Nov 85 Business Supplement pp I, III

[Article by Tariq Zaheen]

[Text] Independent groups working in the United States Congress and outside have indicated their willingness to assist Pakistan in the presentation of its case--purely on technical grounds--for nuclear power generation, provided Pakistan makes "necessary study arrangements" to plead the subject.

During a survey by this correspondent while in Washington, D.C., on "energy requirements for economic growth of Pakistan" a number of individuals and organizations including the spokesperson of the U.S. Committee for Energy Awareness, Barbara F. Fleming, agreed in principle to study the case of Pakistan for its future needs of electricity, though there was no precedence for such a study by these organisations.

Study on Principle

These groups have strong lobbies in the U.S. Congress and have achieved successes in the past for the establishment of nuclear power plants throughout the United States. They said, they were willing to receive Pakistan's case for study only, as a matter of principle for which they were working.

They made no commitments but initially agreed to support the cause of industrial growth and sustained economic development, together with the nuclear energy generation, as a matter of right of the people of any country.

According to these groups, the growth of gross national product (GNP) is deeply linked with the growth of electricity generation. For example, as against 25 percent growth in the GNP of the United States since 1973 (oil crisis) electricity consumption was up by 22 percent. Similarly, according to the U.S. Federal Power Commission sources, the U.S. gross national product was up over 8 percent in the first half of the last year and electricity demand during the same period rose almost equally.

At present there are about 87 nuclear power plants in operation in the United States and 61 more are under construction, scheduled for completion by the early 1990s.

As per figures submitted to the Energy Committee of the U.S. Congress by various study groups of top scientists working for various universities including the Institute of Energy Analysis, Tennessee, nuclear energy is far less expensive than electricity generated by oil or gas but somewhere near the coal generated power plants.

300 Plants

According to OECD sources, 25 countries now produce nuclear-generated electricity and eight more plan to do so by the end of the decade. There are now more than 300 nuclear plants worldwide and close to 200 are being built.

Right now, nuclear power plants are operating in 28 states of USA. Nuclear energy generated by these states is used by nearly nine out of ten Americans in 46 of the 48 contiguous states. The existing nuclear plants in USA supply about 14 percent of America's electricity and are expected to supply close to 20 per cent of the overall electricity requirements by the early 1990s.

Papers have been submitted by the study groups outside Congress--prepared by top scientists--pleading the case for nuclear energy, with titles such as "energy independence," "nuclear energy and oil imports," "nuclear energy for energy independence" and "nuclear waste disposal as practical and safe."

According to official sources, as far as Pakistan is concerned, by 1990s the demand of electricity would grow to about 15,000 megawatt.

Steep Fall

According to estimates, the industrial growth and consequently the gross national product was likely to face a steep fall in the coming three to four years due to the gap in the supply and demand of electricity on the one hand and growing need of industrialisation and mechanisation of farming on the other.

At present, the growth of GNP is about seven percent according to official figures but in real terms, according to independent economists, it is slightly above two percent due to inadequate supply of energy.

There is a gap of 1500 megawatt, on the WAPDA network alone. About 3900 megawatt of electricity is being generated. 1,600 megawatt from a single source, Tarbela dam.

Due to the energy crisis, the manufacturing sector has suffered badly and as compared to last year's figures of 8.1 rpt 8.1 percent increase it was 0.5 rpt 0.5 percent more for the current year.

With the issues related to the Kalabagh dam--with a projected capacity of 2,500 megawatts--still unresolved, the future of hydel electricity generation is bleak, sources said.

Nil Share

As per figures of the OECD and the International Atomic Energy Agency (IAEA), Pakistan has almost a nil share of nuclear energy in its overall capacity as only one small plant in Karachi is operating and none is under construction.

The break-up of energy plants of other countries is as following: USSR 40 in operation 31 underconstruction, France 32 and 27, U.K. 32 and 10, Japan 25 and 11, West Germany 15 and 12, Canada 14 and nine, Sweden 10 and two, Belgium six and two, Bulgharia four and two, Finland four in operation, East Germany five in operation, India four in operation and four under construction, Spain four and 11, Switzerland four and one, Taiwan four and two, South Africa and Romania two each under construction, Philippines, one under construction, Mexico two under construction, Korea two in operation and seven under construction, Hungary one and three, Czechoslovakia two and six, Brazil and Argentina one each in operation and two each under construction, and Cuba one under construction.

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CSO: 5100/4725

PAKISTAN

## MEETING CONSIDERS ATOMIC PRIORITIES

Karachi DAWN in English 7 Nov 85 p 4

[Text]

LAHORE, Nov 6: If Pakistan does not intend to use the atomic bomb, it is meaningless to debate whether it should have a Nuclear weapon or not.

This was stated by former Federal Finance Minister Dr Mubashir Hasan in a meeting arranged by the Pakistan Philosophical Congress on "The Atomic Priorities of Pakistan," here on Tuesday.

In his brief address Dr Mubashir said, to develop an atomic bomb and atomic technology were two different things. "A bomb is meant only for destruction of countless innocent lives but nuclear technology is useful in various ways." He added that by atomic explosions we could remove huge mountains at our northern ranges to raise dams. But Dr Mubashir said, so far as the determination of priorities was concerned, "we should first develop national sovereignty so that we can be able to take our decisions ourselves. At present we are being dictated from outside."

Under these conditions, debate on determining atomic priorities was not rational "when you are not free to decide for yourself." He said that foreign powers were even interfering with Pakistan's plans to develop nuclear power plants. However, Dr Mubashir Hasan was of the view that Pakistan should think of exploiting its rivers particularly Gilgit, Kunhar and Hunza.

Prof Muhammad Usman also supported Dr Mubashir and said that Pakistan should not develop the atomic bomb unless India did so.

Later, Dr Anis Haroon gave a detailed statistical account of scientists and scientific organisations in the country and said that a lot remained to be done in science and technology to catch up with the developed world.

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PAKISTAN

## BRIEFS

PAKISTAN ELECTED TO IAEA--Pakistan has been elected a member of the board of governors of the International Atomic Energy Agency for 2 years. The board is the executive body of the agency, which looks into all important issues relating to promotion of peaceful uses of atomic energy, provision of technical assistance, and applications of safeguards. [Text] [Karachi Domestic Service in Urdu 1500 GMT 1 Dec 85 BK] 12624

CSO: 5100/4727

NIGER

## BRIEFS

URANIUM COMPETITIVE--President Kountche yesterday met with Francois de Wissocq, chairman-director general of COGEMA (General Nuclear Materials Company). After the meeting, De Wissocq stated that he and the president had discussed the international uranium market which at this time is experiencing problems because of the postponement of nuclear programs by many of the world's large consumers. The long-term outlook, however, will improve and Nigerien uranium products will always be competitive on the international market, he predicted, especially because of the quality of products which its partners COMINAK (Akouta Mining Company) and SOMAIR (Air Region Mining Company) process beforehand. [Text] [Niamey LE SAHEL in French 6 Nov 85 p 1] /8309

CSO: 5100/9

SOUTH AFRICA

KOEBERG SIMULATES EMERGENCY EXERCISE

Johannesburg THE CITIZEN in English 28 Nov 85 p 15

[Text]

CAPE TOWN. — The simulated emergency exercise carried out at the Koeberg nuclear power station near Cape Town yesterday progressed well and no unexpected problems were encountered, a spokesman for Escom said.

Initially, the only possible victims of the "radiation leak" at the plant appeared to be some Pressmen who were summoned from their beds at 6 am by Escom officials and asked to report to the visitors' centre at Koeberg to cover the "emergency".

When they arrived at the plant they were told to return to Escom's Cape Town information centre. The wind direction had changed from south-easterly to easterly, necessitating the evacuation of the visitors' centre.

Officials of the Atomic Energy Corporation monitored the exercise.

The "emergency" was caused by the release of radio-activity from the containment building.

Within two hours of the emergency starting at about 4 am, divisional council and Cape Town municipal civil defence teams were asked to "evacuate" an area of several square kilometres south of the power station. — Sapa.

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SOUTH AFRICA

## BRIEFS

KOEBERG NOW USING BOTH NUCLEAR REACTORS--Both nuclear reactors at Koeberg in the western Cape are now generating electricity for commercial use. A statement issued in Johannesburg says the first unit has been in operation since August last year. After extensive tests, the Atomic Energy Cooperation granted ESCOM [Electricity Supply Commission] a license to operate the second unit in September this year. The statement said the two units have so far generated almost as much electricity as ESCOM had supplied to the western Cape last year. The station could now supply about 10 percent of South Africa's peak demand. [Text] [Johannesburg Domestic Service in English 1115 GMT 25 Nov 85 MB] /12858

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EUROPEAN AFFAIRS

## FRANCO-CANADIAN CONSORTIUM TO BUILD COMMERCIAL NUCLEAR SUB

HK290658 Hong Kong AFP in English 0405 GMT 29 Nov 85

[Text] Ottawa, Nov 28 (AFP)--A Franco-Canadian consortium engaged in building the world's biggest commercial nuclear submarine announced Thursday that it will apply early next year to Canada's state-owned Atomic Energy Board for permission to operate a 1.5-megawatt nuclear reactor.

The disclosure came from International Submarine Transportation Systems of Halifax, which has a 45 percent stake in the project, two French firms, Comex and Ifremer, having 25 percent each, and Energy Conversion Systems of Ottawa, five percent.

The submarine, being built at Marseilles, will be 38 meters (125 feet) in length and will weigh 780 tons. It will have a crew of 15, said ISTS chairman Ed Dunn at a press conference.

Saga-N, as the sub is known, is due to be launched in Marseilles next October, but it will not be equipped with its nuclear reactor until 1988, when it arrives in Canada after a series of sea tests, Mr Dunn said.

The reactor, being built by Energy Conversions Systems, will be able to function for seven years using five kilograms (11 lbs) of enriched uranium.

Saga-N will be able to dive to depths of nearly 600 meters (1950 feet) and will be used to explore Canadian waters including those under the polar ice cap, as part of operations to lay pipelines or install oil pumping gear.

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END